GENERAL NOTES

1. Signs are shown for one direction only (with one exception). Signs for the other direction mirror those shown.

2. Double fine signs shall be used only where one or more of the following conditions exist:
   a. Active work areas (where road workers and/or machines are presently working on or adjacent to a road).
   b. Detours on new temporary roads built for that purpose (this does not include detours on existing streets).
   c. Sections of paved roads where pavement has been removed.
   d. Roads being paved where unmatched asphalt fills result in a vertical lip between lanes.

3. Double fine signs shall be confined to the areas where the above conditions exist, with the following exceptions:
   a. If the project is 2 miles or shorter in length, the entire project may be posted for double fines when the above conditions exist on any part of the project.
   b. When the above conditions exist at multiple locations separated by less than 2 miles, the locations and the intervening segments may be posted as a single double fine zone.

4. Double fine signs shall be removed or covered when work activity ceases for more than two days and conditions b, c, or d of note 2 are not met.

5. The R16-100 “BEGIN” sign may be used in place of the first advance warning sign. However, when this is done, the appropriate advance warning sign must be reinstalled when the double fine sign is taken down or covered.

6. When a double fine zone is longer than 2 miles, work zone speed limit signs shall be posted at spacings not greater than 2 miles within the double fine zone.

7. “Work zone speed limit signs”, as used here, refer either to R2-100 signs or 21 standard R2-1 regulatory speed limit signs with CW20-102 “DOUBLE FINES” plates mounted below.

8. The limit shown on work zone speed limit signs shall be either the existing limit before construction or, if a work zone speed limit order has been approved in accordance with ADOT&PF Procedure 05.03.030 PMR, a reduced limit.

9. All existing regulatory speed limit signs within double fine zones shall either be replaced with R2-100 signs or supplemented with CW20-102 plates.

10. Signs shall be installed at major intersections within the double fine zone to warn entering drivers of double fines. This may be done with a R16-100 sign with a CW1-7 arrow panel on the side street or with two work zone speed limit signs on the main street on either side of the intersection. Use of R16-100 signs on side streets eliminates the need for “Road Work Ahead” signs on those streets. If the speed limit has been reduced, the two work zone speed limit signs are mandatory.

11. At the end of each double fine zone, install an R2-1 sign showing the speed limit for the road beyond the double fine zone.
GENERAL NOTES:

1. Final pavement markings conforming to Part 3 of the Alaska Traffic Manual should be installed before paved roads are open to public travel. If that is not practical, install interim pavement markings as shown on this drawing. Maintain interim pavement markings until the final pavement markings are installed.

2. No interim pavement markings are required:
   a. on projects that will not have permanent markings when finished.
   b. in work zones that are open to public travel for no more than one work shift during daytime or for no more than one hour at night.
   c. where DO NOT PASS and PASS WITH CARE signs are installed on two-lane roads as shown in Detail C, no pavement markings are required:
      1) for 3 days if seasonal ADT is above 2000; or
      2) for 1 month if seasonal ADT is below 2000.

3. Interim pavement markings should not be in place longer than 14 calendar days before being replaced with permanent markings conforming to Part 3 of the Alaska Traffic Manual unless the Engineer provides written approval.

4. Where R-4-1 DO NOT PASS signs are used, install at the beginning of no passing zones and at no more than 3500 feet within no passing zones.

5. Install high level warning devices on all DO NOT PASS and PASS WITH CARE signs.

6. Offset temporary markings 8'-12' from the future location of permanent markings if applied on the same lift of pavement.

7. Dimensions in parenthesis apply to curves with a radius of 1000 feet or less where posted speed limit is 30 mph or less.
GENERAL NOTES:

1. Sidefill shall be placed and compacted with care under branches of pipe and shall be brought up evenly and simultaneously on both sides of pipe so it rests above the top of the full length of the pipe.

2. Alternate Installation methods may only be used when specified or approved by the Engineer.

CULVERT PIPE

ARCH

MULTIPLE INSTALLATIONS

<table>
<thead>
<tr>
<th>Dia.</th>
<th>Minimum Space Between Pipes</th>
</tr>
</thead>
<tbody>
<tr>
<td>0&quot; - 12&quot;</td>
<td>24&quot;</td>
</tr>
<tr>
<td>48&quot; &amp; Over</td>
<td>½ Dia. of pipe or 3', whichever is less.</td>
</tr>
</tbody>
</table>

MULTIPLE INSTALLATIONS

<table>
<thead>
<tr>
<th>Dia.</th>
<th>Minimum Space Between Pipes</th>
</tr>
</thead>
<tbody>
<tr>
<td>0&quot; - 12&quot;</td>
<td>24&quot;</td>
</tr>
<tr>
<td>48&quot; &amp; Over</td>
<td>½ Dia. of pipe arch or 3', whichever is less.</td>
</tr>
</tbody>
</table>

State of Alaska DOT&PF
ALASKA STANDARD PLAN
CULVERT PIPE & ARCH
INSTALLATION DETAILS
Adopted as a State Standard Plan by
September 2016

Kendall E. Fisher, P.E.
Chief Engineer

Last Code and Style: Review
Bp. Date
Next Code and Standard Review date: 02/08/2020
### General Notes:
1. All material and workmanship shall be in accordance with the State of Alaska Standard Specifications for Highway Construction.
2. The contractor shall select only pipes that meet specific height of cover criteria shown on the plan or in the special provisions.
3. No more than one type of pipe may be used on any single installation or installation grouping.
4. All structural plate pipes shall be placed on a pre-shaped foundation conforming to the depth of the bottom plates with clearance for the adjacent plates allowed.
5. See Standard Pipe D-005 "Steel Pipe & Arch Installation Details" for structural and foundation details.
6. Minimum cover shall be measured from the top of pipe to the top of rigid pavement or to the bottom of flexible pavement subgrade. In all cases, the minimum cover shall not be less than 12". Minimum cover during construction shall be that required to protect the pipe from damage or deflection.
7. These tables have been developed for an HL-93 live load and for compacted soil weighing 120 lbs. per cubic foot or less. If compacted soil cover exceeds 120 lbs. per cubic foot, the contractor shall use the depth or cover shown in the plans for the specific pipe. Where compacted soil cover exceeds 120 lbs. per cubic foot and no specific cover requirements are provided in the plans, the contractor shall determine the required minimum pipe cover in accordance with Section E of the 2017 ADOT&PF "Lifes Bridge Design Specifications".

### Corrugated Circular Aluminum Pipe

<table>
<thead>
<tr>
<th>Diameter (In.)</th>
<th>Thickness</th>
<th>Min. Cover (In.)</th>
<th>Comp. Cover (In.)</th>
<th>Maximum</th>
<th>Minimum</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>0.062</td>
<td>12</td>
<td>18</td>
<td></td>
<td></td>
</tr>
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<td>0.062</td>
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<td>18</td>
<td></td>
<td></td>
</tr>
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### Corrugated Aluminum Pipe-Arch

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<th>Diameter (In.)</th>
<th>Thickness</th>
<th>Min. Cover (In.)</th>
<th>Comp. Cover (In.)</th>
<th>Maximum</th>
<th>Minimum</th>
</tr>
</thead>
<tbody>
<tr>
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<td>12</td>
<td>18</td>
<td></td>
<td></td>
</tr>
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<td>12</td>
<td>18</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>0.062</td>
<td>12</td>
<td>18</td>
<td></td>
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<tr>
<td>18</td>
<td>0.062</td>
<td>12</td>
<td>18</td>
<td></td>
<td></td>
</tr>
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</table>

### Minimum - Maximum Cover for 2 1/2" x 2 1/2" Aluminum Plate

<table>
<thead>
<tr>
<th>Diameter (In.)</th>
<th>Thickness</th>
<th>Min. Cover (In.)</th>
<th>Comp. Cover (In.)</th>
<th>Maximum</th>
<th>Minimum</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>0.062</td>
<td>12</td>
<td>18</td>
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<td></td>
</tr>
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</tr>
<tr>
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<td>0.062</td>
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<td>18</td>
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<tr>
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<td>0.062</td>
<td>12</td>
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</tr>
</tbody>
</table>

### Minimum - Maximum Cover for 3" x 3" Aluminum Plate

<table>
<thead>
<tr>
<th>Diameter (In.)</th>
<th>Thickness</th>
<th>Min. Cover (In.)</th>
<th>Comp. Cover (In.)</th>
<th>Maximum</th>
<th>Minimum</th>
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<tr>
<td>16</td>
<td>0.062</td>
<td>12</td>
<td>18</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>0.062</td>
<td>12</td>
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<td></td>
</tr>
</tbody>
</table>

*Fu = 0.25, 0.12 sq. feet, sheet ends per foot.
General Notes:

1. All material and workmanship shall be in accordance with the State of Alaska Standard Specifications for Highway Construction.
2. The contractor shall select only pipes that meet specific height of covers shown on the plans or in the special provisions.
3. No more than one type of pipe may be used on any single installation or installation grouping.
4. All structural pipe plates shall be placed on a pre-shaped foundation conforming to the depth of the bottom plates with clearance for assembling to the adjacent plates allowed.
6. Minimum cover shall be measured from the top of pipe to the top of right pavement or to the bottom of double pavement substrates. In all cases, the minimum cover shall not be less than 12". Minimum cover during construction shall be that required to protect the pipe from damage or deflection.
7. These tables have been developed for HL-93 live load and for compacted soil weighing 1000 lbs. per cubic foot or less. If compacted soil cover exceeds 1000 lbs. per cubic foot, the contractor shall use the depth of cover shown in the plans for the specific pipe. Where compacted soil cover exceeds 1000 lbs. per cubic foot and no specific cover requirements are provided in the plans, the contractor shall determine the required pipe cover in accordance with Section II of the AASHTO LTPP Bridge Design Specifications.
### GENERAL NOTES

1. All materials and workmanship shall be in accordance with the State of Alaska Standard Specifications for Highway Construction.

2. For foundation and structural backfill details, see Standard Plan D-01 "Covert Pipe & Arch Construction Details".

3. Pipe cover height is measured from top of the pipe to top of rigid pavement, or to the bottom of subgrade for flexible pavement. In all cases the minimum cover shall be to less than 2 ft. Where loads exceed the cover during construction minimum cover shall be no less than 4 ft.

<table>
<thead>
<tr>
<th>Size (in)</th>
<th>Top Cover (ft)</th>
</tr>
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<tbody>
<tr>
<td>12</td>
<td>24</td>
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<td>14</td>
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<td>20</td>
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<td>24</td>
<td>18</td>
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<td>36</td>
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<tr>
<td>42</td>
<td>18</td>
</tr>
<tr>
<td>48</td>
<td>18</td>
</tr>
</tbody>
</table>
### General Notes

1. All material and workmanship shall be in accordance with the State of Alaska, Standard Specifications for Highway Construction.

2. The contractor shall select only pipes that meet specific height of cover criteria shown on the plans or the special provisions.

3. No more than one type of pipe may be used on any single installation of installation grouping.

4. All structural plate pipes shall be placed on a described condition conforming to the depth of the bottom plates with clearance for assembling to the adjacent plates allowed.


6. Minimum cover shall be measured from the top of pipe to the top of rigid pavement or to the bottom of flexible pavement subgrade.

7. In all cases, the minimum cover shall not be less than 12 inches. Minimum cover during construction shall be that required to protect the pipes from damage or deflection.

8. These tables have been developed for an NL-95 bituminous coat and for compacted soil weighing 120 lb/yd³ per cubic foot or less. If compacted soil cover exceeds 120 lb/yd³ per cubic foot and no specific cover requirements are provided in the plans, the contractor shall determine the required minimum pipe cover in accordance with Section D of the 2017 AASHTO "LFD Bridge Design Specifications".

### Pipe and Arch Tables

**State of Alaska DOT&PF
ALASKA STANDARD PLAN
PIPE AND ARCH TABLES**

Adopted as or Alaska Standard Plan by

Carolyne Markose, P.E.
State Engineer

Adopted: Date 7/8/2020

Last Code and Title, Review:
By P.E. Date 7/8/2020

Sheet Code and Standards Review: 7/8/2020
FOR CONNECTING CONCRETE PIPE OR CORRUGATED POLYETHYLENE PIPE TO METAL END SECTION.

SEE NOTE 2

5/8" GALV. BOLTS

METAL INSERTS FOR USE WITH CORRUGATED PLASTIC PIPE AND METAL END SECTIONS

GENERAL NOTES
1. See general notes on sheet 1 of 3.
2. See sheet 1 of 3 for metal end section dimensions.
3. Insert bolts, washers and rivets shall be galvanized. Insert thickness is the same as the end section.
4. Use culvert inserts only at inlet.
PLASTIC END SECTION FOR CORRUGATED PLASTIC PIPE

<table>
<thead>
<tr>
<th>PIPE DIAMETER</th>
<th>DIMENSIONS IN MILLIMETERS</th>
<th>B MAX</th>
<th>H1</th>
<th>H2</th>
<th>L1/2</th>
<th>W2</th>
</tr>
</thead>
<tbody>
<tr>
<td>12&quot; and 15&quot;</td>
<td></td>
<td>10&quot;</td>
<td>6 1/2&quot;</td>
<td>6 1/2&quot;</td>
<td>25&quot;</td>
<td>25&quot;</td>
</tr>
<tr>
<td>10&quot;</td>
<td></td>
<td>15&quot;</td>
<td>6 1/2&quot;</td>
<td>6 1/2&quot;</td>
<td>30&quot;</td>
<td>35&quot;</td>
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<tr>
<td>8&quot;</td>
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<td>18&quot;</td>
<td>6 1/2&quot;</td>
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<td>36&quot;</td>
<td>45&quot;</td>
</tr>
<tr>
<td>30&quot;</td>
<td></td>
<td>N/A</td>
<td>7&quot;</td>
<td>53&quot;</td>
<td>68&quot;</td>
<td></td>
</tr>
<tr>
<td>36&quot;</td>
<td></td>
<td>N/A</td>
<td>7&quot;</td>
<td>53&quot;</td>
<td>68&quot;</td>
<td></td>
</tr>
</tbody>
</table>

1. Plastic flared end sections may be used with HDPE corrugated culvert pipes where noted in project plans or approved by project engineer.
2. Consult manufacturer's recommendations for proper skiving and coupling devices. Recommended fasteners may include connecting bands or clinch ties. Fittings across dimension B may include threaded rods with wing nuts or bolts and washers. Plastic welds may be recommended.
3. Align coupling to accommodate pipe corrugations.
4. Metal components e.g. bolts or washers must be galvanized.
5. Attachment of end section should preserve culvert alignment and not impair pipe function. Use end sections only at culvert inlet.
6. Toe plate extensions will be required only when designated on the plans.
7. End sections will not be used on HDPE culvert pipes larger than 36" unless indicated by project plans or approved by the Engineer.
GENERAL NOTES:

1. Culvert marker post shall be installed with galvanized steel hardware meeting the following requirements: Galvanizing for nuts and washers shall meet the requirements of ASTM A153, Class C. Galvanizing for steel mounting supports shall meet the requirements of MIL-P-26990A, or ASTM A333, Class C.

* Size and size of culvert to be stamped into a 2-1/4" x 2-1/4" post. Post must be round. Screws to be on side of post facing traffic.

* Black Paint: Exterior Grade, Steel Oxide Enamel

* White Paint: Exterior Grade, Steel Oxide Enamel

* As approved by the Engineer

* 3/16" Galv. Nails 3/4" long

* 3/16" Galv. Steel Nails 3/4" long

* 3/16" Galv. Steel Nails 3/4" long

* 3/16" Galv. Steel Nails 3/4" long

* 3/16" Galv. Steel Nails 3/4" long

State of Alaska DOT&PF
ALASKA STANDARD PLAN

CULVERT MARKER POST

Adopted as an Alaska Standard Plan by

[Signature]
Chief Engineer

Adopted Date: 02/08/2013

Last Code and Style Review

06/30/2019

Next Code and Standard Review Date: 02/08/2025
GENERAL NOTES:

1. 3/4" main line and standpipes to be liquid tight and filled with 50-50 antifreeze.

2. Standpipe support posts to be installed not more than 0'-6" below shoulder.

3. Thaw pipes to be attached to culvert at inlet and outlet ends and to post.
GENERAL NOTES:
1. Loadcenter Cabinet panel face shall be placed parallel with the highway.
2. Type F0 Cast Device Box w/ green pilot light on the termination post shall be located a minimum of 8' above high water.

D-13.10 SHEET 2 of 2

LOAD CENTER CABINET
(NEMA 4 Cabinet w/ Skip Shells)

HEAT CABLE ON
HEAT CABLE OFF

PLACARD DETAIL

CIRCUIT BREAKER SWING TABLE

<table>
<thead>
<tr>
<th>LOAD TYPE</th>
<th>MAX. LENGTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>30/2</td>
<td>240 Ft.</td>
</tr>
<tr>
<td>40/2</td>
<td>300 Ft.</td>
</tr>
</tbody>
</table>

ELEVATION

CULVERT ENTRY DETAIL

SINGLE LINE DIAGRAM

CONTROLS DIAGRAM

SINGLE LINE DIAGRAM
GENERAL NOTES:

1. Either precast or cast-in-place manholes may be used.
2. Details for manhole frame, cover, and step are generic in nature and may vary from shown depending on manufacturer.
3. Use 6" thick cast-in-place concrete bases for depths less than 10' and 12" thick bases for depths 10' or greater.
4. Manhole frames shall have a depth of 6" unless otherwise indicated on the plans.
5. Step requirements:
   a. Max. vertical clearance to bottom of manhole or concrete invert.
   b. 3' minimum embedment.
   c. 1500 lb. lift, pullout force.
   d. ASTM A-615 grade 60 steel bars.
   e. Injection-molded polypropylene covering meeting ASTM D-4010.
   f. Slip resistant foot tread with "wings" to prevent feet from sliding off the edge.
   g. Reflectors at step corners.
6. Reinforcement for precast manhole sections shall meet AASHTO M 189.
NOTES:
1. Details shown are to indicate general design only. Dimensions and design may vary among the manufacturers, except that inlet grate shall be within +/- 1/4" of dimensions shown on this drawing.
2. Manhole lid shall be 32" in diameter and may be used with field inlet frames.
3. Type A field grate frame inside dimensions shall be 24" x 36". Lugs will not protrude outside the concrete surface of the inlet box.
4. Grates shall be bicycle safe. Where high capacity grades are called for on the plans, they shall conform to SDW, D-20.
5. Frame and grate casting types are identified by the following abbreviations:
   - GL = Cast iron
   - PL = Field iron
   - MH = Manhole
6. Flowline depressions shall conform to SDW, D-23 for on grade or on grade extension conditions.
7. These plans are the default frames and grades to be used unless shown otherwise on the drainage plans or drainage structure summary.

<table>
<thead>
<tr>
<th>STRUCTURE</th>
<th>INLET TYPE</th>
<th>CURB TYPE</th>
<th>TYPE FRAME AND GRATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>INLET BOX, TYPE A</td>
<td>Curb</td>
<td>Mountable</td>
<td>Standard Cast Iron</td>
</tr>
<tr>
<td></td>
<td>Curb</td>
<td>Expressway</td>
<td>Mountable Cast Iron</td>
</tr>
<tr>
<td></td>
<td>Curb</td>
<td>Rolled Curb</td>
<td>Depressed Cast Iron</td>
</tr>
<tr>
<td></td>
<td>Field</td>
<td>------</td>
<td>Field Cast Iron</td>
</tr>
<tr>
<td>STORM DRAIN MANHOLES, TYPE I, II, AND III</td>
<td>Curb</td>
<td>Mountable</td>
<td>Mountable Cast Iron</td>
</tr>
<tr>
<td></td>
<td>Curb</td>
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<td>Expressway Cast Iron</td>
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<td>Rolled Curb</td>
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<td>Field</td>
<td>------</td>
<td>Field Cast Iron</td>
</tr>
<tr>
<td></td>
<td>Manhole Lid</td>
<td>Field Inlet Frame, Solid MH, Lid</td>
<td></td>
</tr>
</tbody>
</table>
1. Details shown are to indicate general design only. Dimensions and design may vary among the manufacturers.

2. Minimum casting weight shall be 330 lbs. for Catch Inlet Frame with Curved Box and 320 lbs. for Inlet Grate.

3. The outside dimensions of Inlet Grate shall be 35 1/2" x 17 1/2" and all gratings shall be interchangeable.

4. Minimum drainage area of Inlet Grate shall be 255 square inches.

5. Inlet Grate type G.3R or G.3L shall be used in all cases except where drainage is from both directions, in which case type C.4 shall be used.

State of Alaska DOT&PF
ALASKA STANDARD PLAN
CURB INLET BOX,
FRAME & GRATE
Adopted as an Alaska Standard Plan No. 225

D-23.01
NOT TO SCALE

Last Code and Style Review Date: 02/06/2020
Last Code and Standard Review Date: 02/06/2020
GENERAL NOTES:

1. Details shown are to indicate general design only. Dimensions and design may vary among the manufacturer. Except inlet grate outside dimension shall be as shown on this drawing.

2. Minimum casting weight shall be 500lbs, for Curb Inlet Frame and Grate, 450lbs, for Gutter Inlet Frame and Grate, and 300lbs, for Field Inlet Frame and Grate.

3. Field Inlet Frame may be welded assembly of L 3/4's 3/4"/1/2", angle equivalent to ASTM A 36 steel.

FIELD INLET FRAME AND GRATE

State of Alaska DOT&PF
ALASKA STANDARD PLAN
INLET FRAMES AND GRATES

Adopted as an Alaska Standard Plan by

Karl E. Hummel, P.E.
Chief Engineer

Adopted Date: 02/20/2019

Last Code and Style Review
By: Dakota

Next Code and Standard Review due: 02/20/2029
GENERAL NOTES:
1. Install inlet boxes parallel to the curb line.
2. The plans will indicate which inlet boxes require a sump.
3. Shape floors to drain.
4. Use Grade 40 minimum reinforcing steel.
5. The plans will indicate which inlet boxes require sumps.
**GENERAL NOTES:**

1. For use on 2-d or flatter backfill slopes only.
2. Use Class A concrete.
3. Use epoxy-coated ASTM A706, Grade 60 reinforcing steel f_y = 60,000 psi.
4. Place reinforcement 3" clear from surface of concrete unless otherwise noted.
5. Chamfer all exposed concrete corners 3/4".
6. If unsuitable foundation material is encountered, remove and backfill with Foundation Fill as directed by the Engineer.
7. Headwalls for skewed culverts to be parallel to road centerline. See plans for dimensions of openings in headwalls for skewed culverts.
8. For backfill soils with:
   - w<30', w<350 psi
     - Use A1 and D1
   - w>34', w<135 psi
     - Use A2 and D2
9. See plans for grading requirements at top of wall.
ELEVATION

GENERAL NOTES:

1. For use on 2:1 or flatter backfill slopes only.


3. Use Class A concrete.

4. Use epoxy-coated ASTM A706, Grade 60 reinforcing steel (760,000 psi).

5. Place reinforcement 3" clear from surface of concrete unless otherwise noted.

6. Chamfer all exposed concrete corners 3/4".

7. If unsuitable backfill material is encountered, remove and backfill with Foundation Fill as directed by the Engineer.

8. Furnish and installing hook bolts in place is incidental to Class A concrete.


10. Headwalls for skewed culverts is to be parallel to road centerline. See plans for dimensions of openings in headwalls for skewed culverts.

11. For backfill soils with:

   a. Skew 30°, ±15° PCI:
      Use A1 and D1
      ±15° PCI:
      Use A2 and D2

H O U N K  B O L T

HEADWALLS

PRECAST TYPE I
**GENERAL NOTES:**

1. For use on 2% or flatter backfill slopes only.
2. Use Class A concrete.
3. Use epoxy-coated ASTM A706, Grade 60 reinforcing steel type 60,000 psi.
4. Place reinforcement 3" clear from surface of concrete unless otherwise noted.
5. Chamfer all exposed concrete corners 3/4".
6. If unsuitable concrete material is encountered, remove and backfill with Foundation Fill as directed by the Engineer.
7. Headwalls for skewed culverts to be parallel to road centerline. See plans for dimensions of openings in headwalls for skewed culverts.
8. For backfill soil:
   - q = 300, g = 1500 pc
   - Use A1 and B1
   - q = 345, g = 350 pc
   - Use A2 and D2
9. See plans for grading requirements.

---

**CORRUGATED METAL PIPE**

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<th>B</th>
<th>C</th>
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**ELEVATION**

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**SECTION A-A**

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**HEADWALLS PRECAST TYPE II**

State of Alaska DOT&PF
ALASKA STANDARD PLAN
HEADWALLS PRECAST TYPE II
Adopted by the Alaska
Standard Plan No. 4
State Engineer

Adopted Date: 02/06/2003

Last Code and.Style Review:
By: Delta
Next Code and Standard Review Date: 02/06/2026
GENERAL NOTES:

1. Provide either steel frames and grates or cast iron frames and grates.
2. Chamfer all exposed concrete corners 1/8".
3. Provide 2" minimum cover for all reinforcing steel.
4. Use Grade 40 minimum reinforcing steel.
5. Cast iron frame embedment lugs may differ from the configuration shown for the steel frame. Provide 6 total embedment lugs extending into concrete a minimum of 3".
6. Shop fabricate steel frames and steel grates.
7. Hot dip galvanize steel frames and grates. Provide uncoated cast iron frames and grates.

STATE OF ALASKA DOT/FF
ALASKA STANDARD PLAN
TYPE "C" INLET BOX
18 INCH PIPE
ON 4:1 SLOPE

Adopted as an Alaska Standard Plan No. 401
Chief Engineer

Adopted Date: 02/21/2019

Design Data: 02/08/2020

[Diagram details and notes]
GENERAL NOTES:
1. Provide welded steel frames and grates or cast iron frames and grates.
2. Channel all excess concrete corners 90°.
3. Provide 2" minimum cover for all reinforcing steel.
4. Use Grade 40 minimum reinforcing steel.
5. Cast iron frame embedded last may differ from the configuration shown for steel frames. Provide 0 total embedment length extending into concrete a minimum of 3".
6. Stop fabricated steel frames and steel grates,
7. Not dip galvanized steel frames and grates. Provide uncoated cast iron frames and grates.

CAST IRON GRATE CONFIGURATION
Finished grate size is 27"x42"
GENERAL NOTES:
1. Provide either steel frames and grates or cast iron frames and grates.
2. Cover all exposed concrete corsors 36 inches.
3. Provide 2" minimum cover for all reinforcing steel.
4. Use Grade 40 minimum reinforcing steel.
5. Cast iron frame embedment boxes may differ from the configuration shown for steel frames. Provide 6 solid embedment boxes extending into concrete a minimum of 3".
6. Shop fabricate steel frames and steel grates.

STATE OF ALASKA DOT&PF
ALASKA STANDARD PLAN

TYPE "D" OUTLET BOX
24 INCH PIPE
ON 4:1 SLOPE

Adopted as in Alaska
Standard Plan by

Last Code and Style Review
Sp. Date
Next Code and Standard Review date:

NOT TO SCALE
FIG. 1  TYPICAL SECTION OF ROUNDED SLOPES

TABLE OF ROUNDED DIMENSIONS

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<td>When B is more than 5.0'</td>
<td>When D's is 10.0' or less</td>
</tr>
<tr>
<td>50' or tighter</td>
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<td>5.0'</td>
<td>5.0'</td>
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<tr>
<td>100'</td>
<td>Max. 10.0'</td>
<td>5.0'</td>
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FIG. 2  TYPICAL TREATMENT OF POSITIVE SLOPE INTERSECTION

FIG. 3  TYPICAL TREATMENT OF NEGATIVE SLOPE INTERSECTION

FIG. 4  TYPICAL GRADING FOR WARPING SLOPES

FIG. 5  TYPICAL PROFILE OF WARPED SLOPES

FIG. 6  TYPICAL SLOPE WARPING

GENERAL NOTES

1. Cut and fill slopes shall be rounded as shown in Fig. 1, 2, and 3 when required by the plans or special provisions. Rounding of fill slopes shall be done in the same manner as shown for cut slopes.

2. Intersections of cut and fill slopes shall be warped as shown in Fig. 4 and 5 when required by the plans or special provisions.

3. Warping of cut and fill slopes is for the purpose of allowing a more pleasing appearance and to promote the growth of natural vegetation by causing the fill slopes to lose steepness into the cut slopes. The amount of slope warping is relatively proportional to the character of the topography, the distance between old fills or warped surfaces being based on the natural steepness and lengthened as the topography flattens out. The procedure as outlined herein is typical and shall be varied to meet specific conditions and shall be as styled by the Engineer.

4. SUGGESTED PROCEDURE FOR WARPING SLOPES

   A. Select end points for warping to fulfill specified slope ratios as follows:

      a. The dimensions A, B, and C shall be constant throughout the full length of warping E.

      b. When the average depth of cut or fill is such that the dimension B+C exceeds 10 feet, the ends of warping shall be at points where B+C is 10 feet, provided the warping distance E does not exceed 100 feet. That is, as shown in Fig. 4 and 5, warping shall begin at a cut or fill depth of 6.7 feet for 15' fill, or 50 feet for 20' slopes, etc. If the dimension E exceeds 100 feet, the dimension B+C shall be reduced until the intersections of the prescribed slopes with the natural ground are 100 feet apart.

      c. When the average depth of cut or fill is such that the distance B+C is between 5 feet and 10 feet, the ends of warping shall be at points where B+C is 10 feet, but such points shall not be more than 50 feet apart.

      d. When the average depth of cut or fill is such that the dimension B is less than 5 feet, the ends of warping shall be 200 feet apart.

   B. Set slope stakes at end of warping.

   C. Set additional slope stakes at various intervals between end stakes and at the curves distance from contour.

   D. Further and round warped slopes as shown in Figure 4 for each section.

5. A layer of earth overlying a rock cut shall be rounded as far as possible as though the total height of slope were in earth cut.
GENERAL NOTES:

1. Gates shall be hung on standard angle or steel pipe posts.

2. Metal posts shall be angle steel or steel pipe with dimensions as shown and with the following nominal weights per linear foot: 1 1/2" Nom. Dia. 2.72 lbs., 2" Nom. Dia. 5.65 lbs.

3. Place fencing and gates where shown on plans.

4. Gate shall be manufactured of steel pipe not less than 1" Nom. Dia. (Nom. wt. 1.68 lbs. per linear foot) for frame and vertical brace. Wire mesh shall be 9 gauge and affixed to the frame with 9 gauge 1/8" wire. Each gate shall be equipped with one standard adjustable diagonal cross rod from corner to corner. Hinges and 2-way self-closing latch shall be of approved rustproof malleable iron or steel.

5. Woven wire top and bottom strands shall be 9 gauge intermediate strands and vertical filters shall be 11 gauge.

6. Corner, end and brace posts shall be 2" Nom. Dia. pipe (Nom. wt. 3.65 lbs. per linear foot) or 2 1/2" x 2 1/2" x 4" angle (Nom. wt. 4.3 lbs. per linear foot).

7. Metal line posts (Nominal wt. 1.33 lbs. per linear foot) shall have brother, punted with or corrugated edges to hold hold fencing.

8. Metal braces shall be 1 1/2" Nom. Dia. pipe (Nom. wt. 2.72 lbs. per linear foot) or 2" x 2" x 4" angle (Nom. wt. 3.19 lbs. per linear foot)

9. Wire fencing shall be placed on side of post facing the highway. Special bracing or location may be required when fencing crosses or parallels streams, bodies of water or other items in the fence line.

10. The wire shall be 10 gauge.

All wire, posts and hardware shall be guaranteed. Weights and gates specified are minimums before galvanizing.
**GENERAL NOTES:**

1. Gate shall be hung on standard angle or steel pipe posts.
2. Metal posts shall be angle steel or steel pipe with dimensions as shown and with the following nominal weights per linear foot: 1 1/2" Nominal Diameter - 2.72 lbs., 2" Nominal Diameter - 3.65 lbs.
3. Install fencing and gates where shown on plans.
4. Gate shall be manufactured of steel pipe not less than 1" Nominal Diameter, (Nominal wt. 168 lbs. per linear foot) for frame and vertical brace. Wire mesh shall be 9 gauge and affixed to the frame with 9 gauge 0.1" wire. Each gate shall be equipped with one standard adjustable diagonal lock rod from corner to corner. Hinges and 
5. Woven wire top and bottom strands shall be 9 gauge intermediate strands and vertical fillers shall be 1 gauge.
6. Corner, end and brace posts shall be 2" Nominal Diameter pipe, (Nominal wt. 3.65 lbs. per linear foot) or 2 1/2"x2 1/2"x1/4" angle (Nominal wt. 4 lbs. per linear foot).
7. Metal line posts (Nominal wt. 1.35 lbs. per linear foot) shall have knobs, punched web or corrugated edges to hold fencing.
8. Provide metal braces made of 1 1/2" nominal diameter pipe with a nominal weight of 2.72 lbs per linear foot or 2"x2"x1/4" angle with a nominal weight of 3 lbs per linear foot.
9. Fencing shall be placed on side of post facing the highway. Special bracing or location may be required when fencing crosses or parallels streams, bodies of water or septic in the fence line.
10. Tie wires shall be 10 gauge.
11. All wire, posts and hardware shall be galvanized. Weights and gages specified are minimums before galvanizing.
12. Barbed wire shall be 12 1/2 gage, with 4 point 14 gage round barbs at 5" maximum spacing.

**WOVEN WIRE FENCE**

**NOTE:** All Metal Walk Gates shall be of a similar construction as Type 2 Gate with the exception that vertical brace 8 bars shall be omitted.

**TYPE 2 GATE**

**TYPICAL BRACING DETAIL**

**METAL LINE BRACE**

Installed at not more than 660' apart.

**METAL CORNER BRACE**

*660' Maximum*

**Fencing to be fastened to posts as shown above.**

*Provide positive connection.**

*15" Square Min.*

*4 1/2" Min.*

*18" Cube Min.*

*3" Min. cover or post.*

**CROWN all concrete to drain.**

**Woven Wire Fence with Barbed Wire**

State of Alaska DOT&PF
ALASKA STANDARD PLAN

Adopted as part of Alaska Standard Plans by the

Karsten Pater, P.E.
Chief Engineer

Adopted Date: 02/06/2006

Last Code and Style Review:
02/06/2006

Next Code and Standard Review Date: 02/06/2026
GENERAL NOTES:

1. All covered hardware shall comply with the Task Force 13 (TF13) Guide to Standardized Roadside Safety Hardware online publication. Designators given when possible in parentheses.

2. Install back-up plates between blockouts and w-beam or thrie-beam rail at intermediate (non-splice) posts when steel blockouts are used but not with wood, rubber, plastic, or other approved blockouts.
GENERAL NOTES:

1. W-Beam and Three Beam Terminal Connectors shall conform to AASHTO M 180, Class B, Type II.
2. W-Beam end sections shall conform to AASHTO M 180, Class A, Type II.
3. All covered hardware shall comply with the Task Force 13 (TF13) Guide to Standardized Roadside Safety Hardware online publication. Designators given when possible in parentheses.
GENERAL NOTES:

1. Cable Anchor Plate may be formed in single unit or welded fabrication.

2. Anchor Cable Assembly must conform to AASHTO M 30 with Type II Wire Rope.

3. Provide Sleeve for Wood Posts meeting the requirements of ASTM A53 and made of 2-inch galvanized standard pipe. Sleeve shall be a tight, pressed fit in post.

4. Attach radius 1D plates to all shop-bent guardrail sections. Bolt the ID plates to the back side of the guardrail panel with the lower splice bolt nearest the P.C. of the radius.

5. Show the Roll bend radius, in feet, as "10X" on the radius ID plate. Digit shall be etched or stamped and have a min. height of 1 1/2" and a max. width of 3/4". Galvanize the plate after the digits are marked.

6. All covered hardware shall comply with the Task Force 13 (TP13) Guide to Standardized Roadside Safety Hardware online publication. Designators given when possible in parentheses.

CONTROLLED RELEASE TERMINAL HARDWARE DETAILS

SWAGED FITTING DETAIL
(FIA01-02)

BEARING PLATE for CRT TERMINAL ANCHOR
(FPB01)

CABLE ANCHOR PLATE
(FPA01)

SLEEVE DETAIL
(FMB02)

SECTION A-A
CONSTRUCTION NOTES

1. Install guardrail flexible delineators where shown on the plans.

2. Install guardrail flexible delineators at 50 foot spacing, unless otherwise noted on the plans. Install not less than 2 delineators per guardrail run.

3. Use 3" x 3" white/yellow/red retroreflective sheeting as required per Standard Plan T-05. Install retroreflective sheeting on both sides of delineator on two-way roads.

4. Attach 4" x 1" flexible delineators to the top of new guardrail posts, on the trailing side of the posts relative to the adjacent lane's direction of travel.

5. Use 2 each 1/4" dia. x 1-1/2" long galvanized lag screws for attaching to wood posts and 2 each 1/4" dia. x 3/4" long galvanized self-drilling fasteners for steel posts. Install a galvanized washer between the fastener head and the flexible delineator.

GUARDRAIL FLEXIBLE DELINEATOR DETAIL

(Steel post shown — similar for wood post)
CONSTRUCTION NOTES:

1. No fixed objects allowed within 60° of the back of the guardrail post.
2. Shop form guardrail on curves with a radius of less than 717'.
3. Splice plate connections shall meet ASTM F3125, Grade A325 for bolts and A663, Grade A for hex nuts.
4. HSS Steel Tube box beam rail elements shall meet ASTM A500 Grade B.
5. Provide guardrail reflectors conforming to Standard Plan G-00 and Section 605 of the Standard Specifications.
6. Mount guardrail reflectors every 48" on tangents and 24" on curves. Start reflector installation on the first post. Use Type A reflectors unless shown otherwise on the plans.
7. Do not galvanize contact surfaces between the splice plate and the interior HSS tube surface.

Note: Drawing not to scale
CONSTRUCTION NOTES:
1. Provide hardware compliant with the Task Force 13 (TFTG) Guide to Standardized Roadside Safety Hardware.
2. See Standard Plan G-00 for hardware details not shown on this drawing.
4. Typical post spacing is 6'-3" center to center.
5. Attach guardrail reflectors to guardrail using a 5/8" button head bolt with 5/8" recessed head hex nut and steel washer(s) located shown in the Typical Elevation. Install reflectors every 25'-0" on targets and every 12'-0" on curves starting 100'-0" before the P.C. and ending 100'-0" after the P.T.
6. Use wood or synthetic blockouts designed, tested, and passed per MASH for use with steel posts. Either bolt hole on the blockout may be used for attachment.
7. Use a 25 linear foot transition to match differing height of existing or new rail elements and end treatments - see Standard Plan G-8.
8. W6x9.5 steel post may be substituted for W6x9 steel post.

DESIGN NOTES:
1. No fixed objects allowed within 36" of the back side of guardrail post.
2. This barrier is acceptable under MASH Tests 3-10 and 3-11.
CONSTRUCTION NOTES:
1. Provide hardware compliant with the Task Force 13 (TF13) Guide to Standardized Roadside Safety Hardware.
2. See Standard Plan G-00 for hardware details.
4. Typical post spacing is 6'-3" center to center.
5. Attach guardrail reflector using a 5/8" button bolt with 5/8" recessed head hex nut and steel washer at the location shown on the Typical Elevation. Install reflectors every 25' on tangents and every 12.5' on curves starting 100' before the P.C. and ending 100' after the P.T.
6. Use wood blockouts, designed, tested, and passed per MASH to be used with wood posts.
8. Install flexible delineators on guardrail posts when called for in the contract. See Standard Plan G-00 for guardrail flexible delineator details.

DESIGN NOTES:
1. No fixed objects allowed within 36" of the back side of guardrail post.
2. This barrier is acceptable under MASH tests 2.40 and 2.44.
GENERAL NOTES:

1. Attach guardrail reflector to rail panel using a 5/8" button head bolt with 5/8" recessed head hex nut and steel washer in a mid-span bolt hole in the upper indentation of the rail panel. Begin 37-1/2" from the first applicable guardrail post. Install reflectors every 25' on tangents and every 12.5' on curves starting 100' before the P.C. and ending 100' after the P.T. Type A reflectors shall be used unless specified otherwise on the plans.

2. All covered hardware shall comply with the Task Force 13 (TF 13) Guide to Standardized Roadside Safety Hardware online publication.


5. Mount rail to block with a bolt on the approaching-traffic side of block web.

6. Typical post spacing is 6'-3" center to center.

7. This barrier is acceptable under NCHRP 350, TL3 and TL4.

8. Furnish RTM049-04b thrie-beam rail panels.
CONSTRUCTION NOTES:

1. This drawing is to be used for post length determination only. See Plans for slope and behind-post embankment widths.

2. To determine post length, identify the case that matches site conditions and read the length corresponding to the pertinent guardrail type.

3. These dimensions apply to both curved and uncurved sections.

4. Case 1, 2, and 3 are shown with steel posts. Wood posts may be substituted when allowed by specifications. Wood Post Thill Beam installations must use wood posts only.

5. Case 4 and 5 apply to W31 guardrail only.

DESIGN NOTES:

1. No fixed objects allowed within 36" of the back of post for Cases 1, 2 & 3.

2. No fixed objects allowed within 48" of the back of post for Cases 4 & 5.
1. This drawing illustrates steel post W31 guardrail. Wood posts may be used where noted as applicable to the project.
**CONSTRUCTION NOTES**

1. All covered hardware must comply with Task Force 13 (TF13) Guide to Standardized Roadside Safety Hardware online publication. Designators are given in parentheses, when possible.

2. End section bolts and nuts have the same material requirements as splice bolts.

3. Foundation tube bolts are 7/8" diameter ASTM A307 hex head. Foundation tube bolts require an ASTM A563 A nut and two ASTM F844 7/8" diameter flat washers. Install one washer under bolt head and one under nut.

4. Anchor bracket and strut bolts are 5/8" diameter ASTM A307 hex head. Foundation tube bolts require ASTM A563 A nut and two ASTM F844 7/8" diameter flat washers. Install one washer under bolt head and one under nut.

---

**State of Alaska DOT&PF**

**ALASKA STANDARD PLAN**

**W31 DOWNSTREAM END ANCHOR**

Adopted as an Alaska Standard Plan by: Carolyn Mandell, P.E.
Chief Engineer
Adoption Date: 7/17/2020

Last Code and Style Review: 7/8/2020
New Code and Standards Review Date: 7/8/2020
CONSTRUCTION NOTES

1. All covered hardware must comply with Task Force 13 (TF-13) Guide to Standardized Roadside Safety Hardware online publication. Designators are given in parenthesis, when possible.
GENERAL NOTES:

1. W-beam, blockout, and post details not shown here shall conform to Std Dwg 0-055.

2. All covered hardware shall comply with the Task Force 15 (TF15) Guide to Standardized Roadside Safety Hardware online publication.

3. Foreslopes shall be 4d or false. Backslopes may be 10 maximum to 5d minimum. Lateral offsets shown on this sheet and Sheet 1 are based on the 4d foreslope, 2d backslope, and 10' ditch depth shown on this sheet. Other ditch depth, foreslope, or backslope conditions will require recomputation of lateral offsets and special grading of the top of guardrail to maintain the 48" minimum ground clearance to the top of guardrail and 12" minimum bury at Post A.
GENERAL NOTES:
1. W-beam, blockout, and post details not shown here shall conform to Std Dwg G-055.
2. All covered hardware shall comply with the Task Force 13 (TF13) Guide to Standardized Roadside Safety Hardware online publication.
3. Field drill 1" diameter holes in w-beam rail elements to make connections to the B.I.B. Anchor Plate.

SECTION A-A
Typical for Posts A-C

SECTION B-B
Post D only

B.I.B. ANCHOR PLATE
Plate Notes:
1. Plate is 1/2" galvanized ASTM A36 steel
2. All circular holes are 3/4" diameter
3. All slotted holes are 1" x 1-3/4"

STATE OF ALASKA DOT&PF
ALASKA STANDARD PLAN
WS1 GUARDRAIL
BURIED-IN-BACKSLOPE TERMINAL

Adapted on Alaska Standard Plan by:
Pat Snyder, P.E.
Chief Engineer

Add/Del Date: 03/09/2009

Last Code and Style Review
By: Dania
Next Code and Standards Review date: 03/09/2009
GENERAL NOTES:
1. W-beam, blockout, and post details not shown here shall conform to SHEM Dwg G-055.
2. All covered hardware shall comply with the Task Force (TF) Guide to Standardized Roadway Safety Hardware online publication.
3. All post holes are 3/4" diameter, except those shown as 1" diameter.

POSTS A-C

POST D

FIRST POST AFTER D TO POST H

W6 x 8.5 galv. steel post, fig.
GENERAL NOTES

1. This Std. Dwg. applies to all MASH approved guardrail end terminals (GETs). The alternate detail may only be used with parallel or tangent GETs. The terminal details shown are for illustration only - see manufacturer's drawings for actual post, rail, strut, etc. configuration and layout.

2. Use this Std. Widening Detail for all GETs except when limited right-of-way or limiting site conditions make the use of the Std. Widening Detail inappropriate. In that case, the alternate detail is permissible.

3. Construct the shaded areas to match the slopes of the adjacent shoulder. The slope may be increased to 10:1 if identified in the plans or when approved by the engineer. Match the slope when the shoulder slopes toward the road as well as away from the road.

4. On paved roads, the shaded areas shall be paved. On gravel roads, surface the shaded areas with the same materials used to surface the travel lanes.

5. From point to point make the side slope match the approach side slope except where it is flatter than 4:1. In that case, the slope may be steepened to 4:1.

6. Attach a flexible marker at the beginning of each GET.

7. The max. allowable height for foundation tubes or other steel components of terminal post breakdown systems is 4" above the surrounding grade.

8. The details on this sheet do not apply to W31 Downstream End Anchors (Std. Dwg. G-14).

9. The details on this sheet apply to GETs on both the approach and downstream ends on two-way undivided roads and to any downstream MASH compliant GETs.

10. Some MASH GET systems have an additional post/anchor in the approximate location shown. If this post/anchor is present do not pave the diagonally hatched area. If not present, pave the diagonally hatched area also.

---

ALTERNATE GUARDRAIL TERMINAL WIDENING DETAIL

(USE ONLY WHEN LIMITED RIGHT-OF-WAY OR LIMITING SITE CONDITIONS MAKE THE STANDARD DETAIL INFEASIBLE)

See Note 5 for Side Slope

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STATE OF ALASKA DOT&PF
ALASKA STANDARD PLAN

WIDENING FOR GUARDRAIL END TERMINALS

Adopted as an Alaska Standard Plan by the
DOT&PF Chief Engineer
Adoption Date: 02/06/2019

Limit Code and Std. Review:
By: Date:

Next Code and Standards Review Date: 02/06/2029
CONSTRUCTION NOTES:
1. Do not bolt rail to central post on 8" radius CRT.
2. Steel posts are shown in the transition. Wood post may be substituted when allowed by the Specifications.

DESIGN NOTES:
1. Use the W31 short radius guardrail system to shield hazards at the intersection of a main highway with a minor road or driveway. Typical application include intersections in quadrangle runs caused by intersecting roadways.
2. The short radius guardrail Terminal Anchor shown is for use on low speed (0-35 mph) approach roads or driveways where motorists are required to stop or yield. Do not use this Terminal Anchor for high speed approach roads or driveways when a MASH approved end treatment is required.
3. The Clear Area shall be free of fixed object hazards. Any signs or other highway appurtenances in the clear area must be mounted on MASH compliant roadway supports.
4. Connections to other guardrail systems (e.g., bridge rails and end treatments) and not provided on this drawing. Other details may be needed for this.
5. Short Radius Guardrail on 60 to 90 degree approaches are allowed provided they are constructed with posts at the P.C. and P.T. and the posts are placed on a uniform 6"-3" spacing.
6. When Short Radius Guardrail transitions to guardrail run of 31 f x 1' top-of-rail, transition height over a 25 foot length.
CONSTRUCTION NOTES
1. See Standard Drawings G-00 and G-05 for additional guardrail and guardrail hardware details. See G-26 Sheet 1 of 3 for CRT post details.
   Provide 1" minimum lateral clearance between posts and underground obstruction.
   Nesting of rail elements in the long span area is not allowed.

DESIGN NOTES
1. Total installed length of guardrail and end anchorage (including end terminals, downstream anchors, etc.) shall not be less than 52.5" measured from the outermost CRT post on both the upstream and downstream ends.
2. No fixed objects allowed within 9" of the back of posts where post are omitted. This is the crash-tested lateral deflection of the long span section.
3. Do no install curb in the long span area – this includes the area of CRT posts.

State of Alaska DOT&PF
ALASKA STANDARD PLAN
LONG SPAN
W31 GUARDRAIL
Adopted as an Alaska Standard Plan by
Adoption Date: 02/08/2019

Legend
- Designates CRT post location

LONG SPAN GUARDRAIL PLAN
GENERAL NOTES
1. Barriers may be used for temporary and permanent applications.
2. Provide 35" unobstructed smooth deflection area behind barrier for unanchored applications. Provide 12" unobstructed smooth deflection area behind barrier for anchored applications.
3. When anchored, install anchor pins on the side facing traffic. Precast barrier used as permanent median barrier in medians less than 5' wide shall be anchored to the roadway. When anchored in medians, install anchor pins on both sides of the barrier.
4. Provide 2" clearance between all metal reinforcement and the nearest face of concrete unless otherwise shown.
5. Normal use of precut barrier units is restricted to curvature with radii greater than 770'.
6. Use narrow base shoulder barrier only at locations with full height backfill or equivalent structural support placed behind barrier.
7. When scuppers are not required plug them with a minimum 2" of grout.
8. Concrete grout for grouting over pins, pinning holes or grouting of scuppers shall be a non-shrinking grout, with equivalent consistency.
9. This precut concrete barrier is NCHRP 350 TL-3 approved.

State of Alaska DOT&PF
ALASKA STANDARD PLAN
PRECAST CONCRETE
"F" SHAPED BARRIER

Adoption Date: 06/01/2019

Limit Code and Style Revision:
By: [Name]
Date: [Date]
Next Code and Standards Revision: [Date]
**GENERAL NOTES**

1. Use tapered end sections only where:
   a. Barriers terminate outside the clear zone.
   b. The regulatory speed limit is 25 MPH or below, or 30 MPH if the Engineer determines NCHRP 350 or MASH compliant end treatments are feasible.

2. Provide a minimum of two inches clear cover for reinforcing steel bars except as shown otherwise.

3. Galvanize all exposed hardware in accordance with AASHTO M 235.

4. Provide reinforcing steel bars conforming to AASHTO M 51, grade 60.

5. Provide anchor pins and anchor pins conforming to ASTM A36 steel.

6. Provide four anchor pins per unit.
CONSTRUCTION NOTES

1. This concrete barrier meets MASH TL-3 and may be used for temporary and permanent applications.

2. Use Class B-B concrete (5,000 psi) meeting the requirements of Section 550 of the Standard Specifications.

3. Provide the following unobstructed smooth deflection area behind barrier:
   - 18" when anchored to concrete
   - 22" when anchored to asphalt pavement
   - 64" when unanchored

4. When anchored, install anchor pins on the side facing traffic. Concrete barrier used as a permanent median barrier in medians less than 8' in width shall be anchored to the roadway with anchor pins on both sides of the barrier.

Note: Drawing not to scale
CONSTRUCTION NOTES

1. When this barrier is used as a temporary traffic control device, provide retroreflective tape or stripes meeting the requirements of Section 643 of the Standard Specifications.

2. When this barrier is used in a permanent application, provide reflector assemblies meeting the requirements of Section 614 of the Standard Specifications.

CONCRETE ANCHOR PIN DETAILS

ANCHOR PIN DETAILS
1 1/2" Dia. (ASTM A936)
Hot Dip Galvanized (ASTM A123 OR AASHTO M 111)

PLATE WASHER DETAIL
(3/16" Dia. Hole)
1 3/16" Dia. Hole
1/2" Thick
TOP

ELEVATION
WASHER DETAIL
ASTM A37, Grade 50
1 3/16" Dia. Hole
1/4" Thick
TOP

CONNECTING PIN DETAILS
1" Dia. - ASTM A449
Hot Dip Galvanized

BARRIER CONNECTION DETAIL
Loop Bar, typ.

NOTES:
Drawing not to scale

State of Alaska DOT&PF
ALASKA STANDARD PLAN
MASH "F" SHAPE
CONCRETE BARRIER
Adopted as an Alaska Standard Plan by: Carolyn Morehouse, PE
Chief Engineer
Adoption Date: 07/17/2020
Last Code and Style Review By: LPO Date: 07/17/2020
Next Code and Standards Review Date: 07/17/2030
CONSTRUCTION NOTES:
1. Use the type of curb and gutter shown on the plans.
2. Construct ramp runs and landings of concrete, regardless of whether the sidewalk is asphalt or concrete.
3. Construct ramp slopes at a 7.7% nominal grade, or flatter. Ramp slopes may be increased to a maximum of 8.3% when one condition warrants it. Ramp lengths should be increased to keep grades under the 8.3% maximum, but are not required to exceed 10.0 feet. The resulting ramp grade at a 10.0-foot ramp length is acceptable even if it exceeds 8.3%.
4. Construct flared slopes at 8.3% (measured parallel to the curb line) or flatter, sidewalk cross slopes at 1.0% nominal (0.1% max., and 2.0% max.), and ADA Curb and Gutter gutter pan slopes at 4.7% nominal. Construct grades below perpendicular to ramp runs.
5. Do not construct flared slopes greater than 10.0% of sidewalk cross slopes steeper than 2.0% and ADA Curb and Gutter gutter pan slopes steeper than 5.0%. These are the steepest slopes allowed under the 2006 ADA Standards for Transportation Facilities.
6. Provide a coarse broomed finish on ramp runs perpendicular to the ramp slope.
7. When approved by the Engineer, curb returns may be replaced with forms or locations where access to the side of a ramp run is free of poles, utility boxes, other obstructions, or non-accessible surfaces such as a dirt planter strips. See Standard Plan I-22 for these details.
8. Install 24" wide detectable warning sections for the full width of the ramp. Provide a triangular curb detail meeting Section 705.1 of the 2006 ADA Standards for Transportation Facilities. Align triangular curb detail in the predominant direction of wheelchair travel to prevent wheels to roll between surfaces.
9. Maximum cross slope on upper landings, measured in any direction, is 2.0%. Maximum cross slope on ramps is 2.0% measured perpendicular to the ramp run.
CONSTRUCTION NOTES:

1. See plans for ramp type at specific locations. See paving plans for crosswalk layout.

2. Construct ramp runs and landings of concrete, regardless of whether the sidewalk is asphalt or concrete.

3. When one parallel curb ramp will serve two directions, use the One Crossing Direction detail and refer to the paving plans for crosswalk layout.

4. Ramp run lengths are shown for a flat sidewalk grade. For other sidewalk grades, increase or decrease ramp and flue lengths to maintain the slopes shown.

5. Construct ramp slopes at a nominal 1.0% grade. Do not return to a minimum of 0.3% when the conditions warrant it. Ramp lengths should be increased to keep grades under the 0.3% maximum, but not required to exceed 15.0 feet. The resulting ramp grade of a 15.0 feet ramp length is acceptable even if it exceeds 0.3%.

6. Construct sidewalk cross slopes at 1.0% minimum (1.0% max. and 2.0% max).

7. Provide a course broomed finish running perpendicular to the curb on ramp runs and upper landings and parallel to the curb on lower landings.

8. Install 24" detectable warning tiles meeting Section 708.1 of the 2006 ADA Standards for Accessibility Standards for the full width of the ramp.

9. Maximum cross slope on lower landings is 2.0% as measured in any direction. Maximum cross slope on ramps is 2.0% measured perpendicular to the ramp run.

10. Provide 4" minimum thick concrete or ramps and landings.

**STATE OF ALASKA**

ALASKA STANDARD PLAN

**PARALLEL CURB RAMP**

Adopted by the Alaska Department of Transportation and Public Facilities

Carolyn Marshall, PE

City Engineer

Alaska DOT&PF

Adopted Date: 7/17/2020

Last Code and Title Revision: 7/17/2020

Test Code and Standards Review dated 7/15/2020
CONSTRUCTION NOTES

1. See plans for ramp type at specific locations. See striping plans for crosswalk layouts.

2. Construct ramp runs perpendicular to the curb face.

3. Construct ramp runs, flares, and upper landings of concrete, regardless of whether the sidewalk is asphalt or concrete.

4. Ramp runs and flare lengths are shown for a flat sidewalk grade. For other sidewalk grades, increase or decrease ramp and flare lengths to maintain the slopes shown.

5. Construct ramp slopes at a minimum 3.5% grade. For steeper grades, ramps slopes may be increased to a maximum of 8.3% maximum, but are required to exceed 15.0 feet. The resulting ramp grade at a 15.0 foot ramp length is acceptable over 0.3%. Do not construct ramp slopes steeper than 10.0%, or sidewalk cross slopes steeper than 2.0%.

6. Construct flare slopes at 8.3% (measured parallel to the curb face adjacent to the top back of curb) or flatter, and sidewalk cross slopes at a minimum 1.0% (1.0% min., 2.0% max.). Do not construct flare slopes steeper than 10.0%, or sidewalk cross slopes steeper than 2.0%.

7. Provide a coarse broomed finish running parallel to the curb on ramp runs and flares.

8. When approved by the Engineer, flares may be replaced with a curb at locations where access to the side of a ramp run is blocked by poles, utility boxes, other obstructions, or by a non-accessible surface such as a dirt parking strip, see standard plans B-20 for details.

9. Install 24" detectable warning tiles for the full length of the ramp. Provide tiles with truncated domes meeting Section 705.1 of the 2006 ADA Standards for Transportation Facilities.

10. Maximum cross slope on upper landings, measured in any direction, is 2.0%. Maximum cross slope on ramps is 2.0% measured perpendicular to the ramp run.

11. Provide 4" minimum thick concrete or ramps, flares, and landings.
GENERAL NOTES:
1. Accessible aisles and accessible routes and those pathways leading from the accessible parking space to the sidewalk shall be free of any obstructions, fixtures or loose surfaces.

2. See standard drawing I-20, I-21, I-22 for curb and curb ramp details.

3. All curb ramps shall be constructed of concrete.

4. The slope for all accessible parking spaces, van accessible parking spaces and access aisles shall not exceed 5% in any direction.

5. Although only perpendicular ramps are shown, either parallel or perpendicular ramps are allowable, space permitting.

ON-STREET PARALLEL PARKING NOTES

1. The 13'-0" width provides for 8'-0" wide parking with a 5'-0" wide access aisle on either side of a car.

2. Add a new curb ramp and 5'-0" aisle between parking spaces for each additional two accessible parking spaces.

3. Parking spaces may be made van accessible by providing an unobstructed 8'-0" sidewalk width next to each parking space. Ensure curb ramps, parking meters, sign posts, etc. do not encroach on the area where a van's lift would operate.

4. In some cases, ADAAG may allow normal-width parking spaces at the beginning and end of blocks to be designated as accessible. See the latest ADAAG.

** R7-8 "Reserved Parking" and, where appropriate (see note 3), R7-8A, "Van Accessible".
SUPERELEVATION TRANSITION

GENERAL NOTES:
1. Location of transition length relative to horizontal curves will be shown on the plans or as directed by the Engineer.
2. Widening for guardsrail or curvature will not change the location of the axis of rotation.
3. Minimum vertical curve length in feet shall be the numerical value of the design speed in M.P.H.
4. Super-elevation shall be built into the subgrade and carried through the shoulders.

CASE I
PAVEMENT REVOLVED ABOUT CENTERLINE

CASE II
PAVEMENT REVOLVED ABOUT INSIDE EDGE
TO BE USED WHERE DRAINAGE IS THE GOVERNING CONSIDERATION

CASE III
PAVEMENT REVOLVED ABOUT OUTSIDE EDGE TO BE USED WHERE OVERALL APPEARANCE IS THE MAIN CONTROL
CONCRETE STREET LIGHT POLE FOUNDATION

MATERIAL REQUIREMENTS

- Concrete
- 300 psi
- Reinforcing Steel
- A400 3/8"
- A600 3/4"
- Ground Wire
- PVC
- FRP Couplings

DEPTH TABLE

- ELECTRICAL + SIDE LOAD (kips)
- 8
- 5
- 5
- 0
- 8
- 5

CONTROLLED LOW STRENGTH MATERIAL MIX DESIGN

- Portland Cement: 185
- Water: 120
- Time to V-500: 3041
- Water Content: 4.0 oz

DESIGN NOTES:

1. This foundation is approved for electrical and low-speed traffic signal applications in categories soils with an 0.1% slope of 15 or greater per 100 feet.
2. Concrete shall be used if any of the following are encountered while slope foundation, very loose soils, organic silt, cohesion soil (SM), or soils susceptible to frost action. If any of these conditions are encountered, stop foundation work and contact the Engineer.
3. Place foundation in skilled or excavated hole with spoil outside foundation located at the station, offset, and elevation specified in plans. Set foundation to satisfy the conditions depicted in clearance details.
4. Form the foundation in corrugated metal pipe conforming to Subsection 707-2.01 of the Specifications.
5. Provide 1-5% extra tons at each end of the spiral reinforcing steel. Realigning of the spiral reinforcing steel shall not be permitted. The vertical reinforcing steel is a detail of the foundation, and the spiral reinforcing steel must be unaltered.
6. Complete all concrete work with concrete in accordance with Sections 502, 503, and 868 of the Specifications. Use only materials that are acceptable to the Engineer. Ensure all concrete mix proportions are appropriate for the use of the materials and are free of any material or defects prior to concrete work.
7. Ensure all concrete is placed in accordance with Section 205 and Subsections 203-5.04 and 868-5.01 of the Specifications. Use all materials that are acceptable to the Engineer. Ensure all concrete mix proportions are appropriate for the use of the materials and are free of any material or defects prior to concrete work.
8. Before the concrete mix proportions are finalized, consult with the Engineer to ensure the concrete mix proportions are appropriate for the use of the materials and are free of any material or defects prior to concrete work.
9. Ensure all concrete is placed in accordance with Section 205 and Subsections 203-5.04 and 868-5.01 of the Specifications. Use all materials that are acceptable to the Engineer. Ensure all concrete mix proportions are appropriate for the use of the materials and are free of any material or defects prior to concrete work.
10. Before the concrete mix proportions are finalized, consult with the Engineer to ensure the concrete mix proportions are appropriate for the use of the materials and are free of any material or defects prior to concrete work.
11. The clearance for traffic signal applications in Categories soils with an 0.1% slope of 15 or greater per 100 feet is 45.0 feet. Any deviation from this clearance may be required to maintain 4" maximum clear distance.
GENERAL NOTES:
1. For Structures under 200' total length, provide 1 monument.
2. For Structures 200' or over; provide 2 Monuments.
3. Monuments shall be located as directed by the Engineer.
1. Details shown are to indicate general design only. Dimensions and design may vary among the manufacturers.

2. Where monument cases are to be placed in paved area of a roadway or sidewalk, the top of the case and/or cover shall be the same elevation as the top of the finished surface with bolting type access cover.

3. Where monument cases are to be placed in gravel surfaced roadway, the top of the case shall be placed 1" below the top of the surface of the roadway.

4. In solid rock, drill a 2" Dia. hole a minimum of 1-3/4" deep, fill with mortar and set cap. 5/8" round headed bolts, designated length when set in mortar.

5. The top of the monument cap shall be placed 1" above the bottom of the monument case.

State of Alaska DOT&PF
ALASKA STANDARD PLAN
BRASS CAP MONUMENT
AND MONUMENT CASE

Adopted as of Alaska
Standard Plan No.

M-16.01

C-16-01

Sheet 1 of 1

FILE: M-16.01

DATE: 02/06/19

State Code and Standard Review
02/06/2020

State Code and Standard Review date: 02/06/2020

 depth

bolting monument case assembly
(see note 2)

monument cap

extension pipes

monument detail

plan view access cover

section A-A

1/4" galv. type bolt

5/8"
GENERAL NOTES:

1. Install mailboxes conforming to U.S. Postal Service requirements.

2. Mailbox supports shall not present a rigid, unyielding impact resistant hazard to road traffic, but shall be flexible and yielding to vehicular impact. Install crushworthiness supports in accordance with Standard Plan M-23.

3. Installations shall be on the right side of roadway in the direction of mail carrier travel with the exception of one-way streets where they may be placed on either side.

4. Locate mailboxes to minimize dangers to road traffic, pedestrians, and postal recipients.

5. Provide a minimum shoulder width of 0' unless otherwise approved by Engineer. Install single and double mailboxes separated by at least 3', and desirably 4', from each other. More than two boxes on a single support is allowable only as shown on Standard Plan M-23.

6. Newspaper receptacles shall conform to the same setback and support regulations as mailboxes. Where newspaper receptacles and mailboxes are to be mounted together, the newspaper receptacle may be mounted beneath the mailboxes or on the side of the mailbox support opposite the reflecting marker.
GENERAL NOTES:

1. See Standard Plan M-20 for locating posts and boxes along roadway.

2. Posts shall be 6" x 6" Treated Wood Post S4S or 2" dia. Standard Weight Steel Pipe.

3. Each support structure shall not accommodate more than two mailboxes unless the support structure conforms to the requirements of the U.S. Postal Service and is approved by the Engineer.

4. Other steel or aluminum structural sections may be used except He sitsfies properties equivalent to the 2" dia. standard weight steel pipe shall not be exceeded.

5. Reflectors shall have a minimum area of 4.5 sq. in.
CONSTRUCTION NOTES:
1. Place intermediate turnbuckles in adjacent spans. Maximum span between turnbuckles is 200'-0".
2. Coat all posts, cable and hardware.
3. Install posts plumb.
4. Alignment of holes in posts may vary to conform to slope of top of wall.
5. Line posts shall be branded horizontally and spaced adequately in both directions of intervals not to exceed 1000'-0" and at each end.
6. Typical end spans, braced in both directions, shall be constructed of chases in line where the angle of deflection is 15° or more.
7. Provide thimbles at all cable loops.

DESIGN NOTES:
1. This rail is not intended for use where pedestrians or bicyclists are normally present.
2. This rail is intended for use where MBO personnel, inspectors, or engineers may be working at the top of a wall.

State of Alaska DOT&PFF
ALASKA STANDARD PLAN
CABLE SAFETY RAIL

Adopted as an Alaska Standard Plan by

KENNETH L. FISHER, P.E.
Chief Engineer

Adoption Date: 02/01/2019
Last Code and Style Review By: 
Date: 
Next Code and Standards Review Date: 02/01/2029
SMALL STREET NAME SIGN (63-1, 63-1A, 63-1D) BRACING DETAILS

TUBE POST SIGN BRACING SECTION A-A

Plan view

<table>
<thead>
<tr>
<th>Sign Weight (lbs)</th>
<th>Effective Brace Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>1.24</td>
</tr>
<tr>
<td>60</td>
<td>2.4</td>
</tr>
<tr>
<td>90</td>
<td>3.6</td>
</tr>
<tr>
<td>120</td>
<td>4.8</td>
</tr>
<tr>
<td>300</td>
<td>11</td>
</tr>
<tr>
<td>450</td>
<td>16.5</td>
</tr>
</tbody>
</table>

< 30 lbs No bracing required and use square tube

Note: Drawing not to scale
GENERAL NOTES

1. Unless otherwise shown on the plans, the standard sign offset is 12'. The minimum is 6' where shoulder width is 6' or greater.

2. Add 6' to mounting height on unpaved roads.

3. If signs extend over bike paths, the minimum vertical clearance is 8' 0".

4. When signs are placed 30' or more from the edge of traveled way, mount them with the bottom of the sign at least 5' above the road surface at the near edge of the road.

5. When multiple hinged sign supports are used, mount hinges at least 7' above the ground.

6. Minimum mounting height is 7'-0" where parking or pedestrian movements are likely to occur, or where signs extend over sidewalks.

7. For construction signs in rural areas, mounting height shall be 7' minimum.

State of Alaska DOT&PF
ALASKA STANDARD PLAN
POST MOUNTED SIGN
OFFSET AND HEIGHT
Adopted as an Alaska Standard Plan by: Carolyn Warehouse, P.E.
Chief Engineer
Adoption Date: 7/17/2020

State Code and Title: Review
By: Date: 7/8/2020
Next Code and Standards Review Date: 7/8/2020
The diagram shows a sign post detail with various components and specifications. Attached to the post are sign brackets made of aluminum alloy 6061-T6. The brackets are fastened with bolts and washers, ensuring the sign is securely mounted. The use of stainless steel fasteners is recommended to resist corrosion.

The FASTENER SPECIFICATION TABLE includes the following details:

- **Fasteners**: Machine F468, 2024-T4, A307, F593.
- **Bolts**: Machine F468, 2024-T4, A307, A276, Type 304.
- **Nuts**: Regular F467, 6061-T6, A563, F94.
- **Washers**: F844, A480.
- **Post Cup**: A356-T6, N/A, N/A.

All references are to ASTM standards. The diagram notes that 5/16" bolts with flat washers are used for mountings. The bolts should be selected to meet conditions and loads specified by the manufacturer.
GENERAL NOTES

1. Use pole plate assemblies shown here to install signs on tapered mast arms and light poles. Install one pole plate per 10 square feet of sign panel. Use at least two plates for each installation.

2. Fabricate each pole plate-to-perforated tube adapter (steel pole welded to pipe) using steel plate conforming to ASTM A36 and steel pipe conforming to ASTM A53. Paint these adapters in accordance with section 504 of the Standard Specifications for Highway Construction, latest edition.

3. Paint the assemblies in accordance with AASHTO standard specification M62.

4. Attach each pole plate with two bands of 3/4" wide by 0.020" thick stainless steel banding material. Double wrap each band and tighten it until the band stops moving through the buckles, installing bolts, nuts, and washers conforming to ASTM A325.

5. ASTM A325.

| TABLE 1 |
|---|---|---|
| NO. OF POLE PLATES | OVERHANG BETWEEN POLE PLATES | OVERHANG |
| 0.2W | 0.2W | 0.2W |
| 0.7W | 0.7W | 0.7W |
| 1.0W | 1.0W | 1.0W |
| 2.0W | 2.0W | 2.0W |

**INSTALL SIGN LEVEL**

Locate the sign centric on the centerline of the mast arm whenever minimum clearance is met.

For standalone overhead sign the minimum mounting height is 18'-6".

For traffic signal mast arm sign the minimum mounting height is 17'-6".

See Table 1 for saddle mount spacing.

**ELECTROLUMINESCENT SIGN MOUNTING**

1 1/2" pt. brace only when H ≤ 48".

**Use two pole plates when H ≤ 48"**

**Use three pole plates when H > 48"**

When sign panels feature prohibited mounting holes, use them to attach the perforated tubes.

**Adjust location of brace so that bolts and washers miss the legend.**
GENERAL NOTES:

1. Sign shall be placed symmetrically around posts and refer to Standard Plan S-005 for sign framing details.

2. See plans for type of post, size and embedment type.

3. To maintain straightness, install no more than the number of P.S.T.'s at wood posts specified in the tables within 3 ft of each other.

4. Concrete shall be class C.

5. Do not use the supports on this drawing for multiple support signs if supports are separated by more than 7 feet.

6. Treat all field cuts and field drilled holes in wood posts in accordance with Section 730-204 of the Standard Specifications.

SIGN POST SPACING NOTES:

1. Install sign support in accordance with the table below, unless otherwise required by plans or specifications.

2. Exceptions:
   a. Use one post for all E.I. gore signs, regardless of width.
   b. Use one 2.5" P.S.T. for all STOP signs, with or without street name signs.

3. Supports placed within 7 ft of each other must be acceptable for that use. See tables below for the sizes of wood posts and P.S.T.'s that may be used within 7 ft. See Manufacturer's documentation for breakdown couplings and tubes that may be used within 7 ft.


WOOD SIGN POSTS

<table>
<thead>
<tr>
<th>SIZE</th>
<th>HOLE DIA</th>
<th>EMBR CMT</th>
<th>NO. OF POSTS</th>
<th>VERT. POSTS</th>
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</thead>
<tbody>
<tr>
<td>4 1/4&quot;</td>
<td>4 1/4&quot;</td>
<td>3/4 of</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>4 1/4&quot;</td>
<td>3 3/8&quot;</td>
<td>3/4 of</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>4 1/4&quot;</td>
<td>3 3/8&quot;</td>
<td>3/4 of</td>
<td>1</td>
<td>1</td>
</tr>
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</table>

PERFORATED STEEL TUBES (P.S.T.)

<table>
<thead>
<tr>
<th>POST SIZE</th>
<th>EMBR DPTH</th>
<th>COST</th>
<th>P.S.T. PER</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 3/4&quot; x 1 1/2&quot;</td>
<td>4 1/4&quot;</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>2 1/8&quot; x 2 1/8&quot;</td>
<td>4 1/4&quot;</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>2 1/8&quot; x 1 1/2&quot;</td>
<td>5 1/2&quot;</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

VECTO TUBE POST SPACING

<table>
<thead>
<tr>
<th>TUBE SIZE</th>
<th>NO. OF POSTS</th>
<th>COST</th>
<th>P.S.T.</th>
<th>TUBE</th>
<th>W-SHAPE</th>
<th>NOTES</th>
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</thead>
<tbody>
<tr>
<td>0.5 to 2.0</td>
<td>0.5&quot;</td>
<td>1</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>See Note 2</td>
</tr>
<tr>
<td>2.0 to 10.0</td>
<td>2.0&quot;</td>
<td>0.5W</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>See Note 3</td>
</tr>
<tr>
<td>3.0 to 20.0</td>
<td>3.0&quot;</td>
<td>1.5W</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>4.0 to 15.0</td>
<td>4.0&quot;</td>
<td>1.5W</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>5.0 to 20.0</td>
<td>5.0&quot;</td>
<td>1.5W</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>6.0 to 25.0</td>
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<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>7.0 to 30.0</td>
<td>7.0&quot;</td>
<td>1.5W</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

State of AK DOT
dotalka
firm

LONG SIGN STRUCTURE

Note: Drawing not to scale
GENERAL NOTES

1. Furnish sign posts with NCHRP 350 compliant frangible couplings designed to break away safely when struck from any direction. There is no WASM compliant device at this time. See SPDR report for more info.

2. Furnish frangible coupling systems with bolt-on flanges.

3. Details on this sheet illustrate only the general components of a frangible coupling system, and are not intended to specify a particular product.

4. Install frangible face plates as specified by the manufacturer and hinged joints when multiple posts are used to support a sign. Do not use round pipes.

5. Install the components of the breakaway system, including hinges, in accordance with the written instructions of the system manufacturer.

6. Use Class A, B or W concrete conforming to Sections 501 or 350 of the Spec standard. Furnish ASTM 4815 grade 60 steel bars for concrete reinforcement conforming to AASHTO M31.

7. Spiral reinforcing steel may be substituted for hoops in concrete foundation. Spiral option shall consist of #3 plain spiral with 6" pitch with three flat turns at the top and one flat turn at the bottom.

8. Install the concrete anchors using a rigid template. Locate the anchors on centers and within tolerances specified by the manufacturer.

9. Install the anchors in fresh concrete as recommended by the manufacturer. Adjust the template's final position until it is level. Remove and replace all foundations that need more than 2 shims under any 1 coupling or more than a total of 3 shims under any pair of couplings to plumb the post.

10. Drill the holes for attaching brackets before the sign posts are hot dip galvanized. Test fit templates in the holes to ensure the brackets can be installed square to the posts.

11. Special grading detail and/or shielding may be required to maintain 4' maximum clear distance.

State of Alaska DOT&PF
ALASKA STANDARD PLAN
SIGN POST BASE AND FOUNDATION
Adopted as an Alaska Standard Plan by
Carolyne Wearmouth, P.E.
Chief Engineer
Adoption Date: 7/17/2020

Last Code and Standard Review
by RKL/AK Code: 7/9/2020
Next Code and Standards Review Date: 7/9/2030
GENERAL NOTES

1. This is a non-crashworthy sign support. It may only be used at locations shielded by a guardrail, barrier, or wall. It may not be used if the sign post is within 20' of the rail and is closer than 75' from the guardrail end post (measured along the rail). For this case use a breakaway sign support. See Standard Plan G-20.

2. Furnish steel tube sign post and stub post that conform to ASTM A500, grade B, and meet ASTM A123 for hot dip galvanizing.

3. Install tubes and stub post with a 0.1875" wall thickness.


5. Spiral reinforcing steel may be substituted for hoops in concrete foundation. Spiral option shall consist of No. 3 plain spiral with 6" pitch with three flat turns at the top and one flat turn at the bottom.

6. Use Class A, B or W concrete.

<table>
<thead>
<tr>
<th>POST SIZE &amp; TYPE</th>
<th>FOUNDATION</th>
<th>REINFORCEMENT</th>
<th>STUB POST</th>
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* Foundation sized for use where there are no loose, high moisture, or fine grained soil.

State of Alaska DOT&PF
ALASKA STANDARD PLAN
SIGN POST BASE AND FOUNDATION BEHIND BARRIER
Adopted as in Alaska
Adoption Date: 7/17/2020

[Signage diagram with dimensions and specifications]
GENERAL NOTES:
1. Details shown are to indicate general design only. Dimensions and design may vary among the manufacturers.
2. Luminaires shall use 250 watt color improved mercury vapor lamps.
3. Minimum clearance of luminaire and/or sign from travel way shall be 7" except where existing structure is lower, in which case it shall be no lower than the existing structure. Height, location and number of luminaires and/or signs shall be specified on the plans.
4. Structural angles, plates, brackets, hooks, clamps and fasteners shall be A6063-T6, High Strength Low Alloy Structural Steel ASTM A325, or Steel ASTM A36. Bolts, nuts and washers shall be A325.
5. All angles, plates, tubing, brackets and fasteners requiring fabrication, welding, bending or shaping shall be shop fabricated to AASHTO Specifications with ASCE Specifications for Design and Construction of Structural Supports for Highway Signs by AASHTO.
6. All components of aluminum in contact with dissimilar metals to be avoided wherever possible. Aluminum placed in contact with dissimilar metal shall be painted by ASCE Specification G601 Part III Section 1-6. All tensioned metal shall be galvanized in accordance with ASTM A525 and ASTM A53. Painting of metal surfaces shall conform to Section 708 of the State of Alaska Standard Specifications for Highway Construction, latest edition.
GENERAL NOTES

1. Maximum spacing on tangents, speed change lanes, pavement transitions, and ramps should be 100'.

2. On roads with continuous delineation, adjust existing guide marker locations to be consistent with these configurations.

3. Marker spacing in table has been rounded for ease of calculation and field layout.

4. Spacing on tangents should be approximately 50', 53' maximum. See table for spacing on curves.
RECESSED PAVEMENT MARKER SLOT

RECESSED PAVEMENT MARKERS WITH DOUBLE CENTERLINE INSTALLATION

GENERAL NOTES
1. Install recessed pavement markers spaced at 50' on tangent sections of roadway and on curves with a radius greater than 1,000'.
2. Install recessed pavement markers spaced at 40' on curves with a radius 1,600' or less.
3. Install recessed pavement markers between the lines on sections with double lines (either broken or solid).
4. Increase the distance between yellow painted lines from the standard 3" up to a maximum of 5" to minimize paint over spray onto the marker.
5. Install recessed pavement markers on the centerline of the lane, midpoint between stripe segments on sections with single broken lines.
6. Install reflectors of the same color as the pavement markings they supplement, except when red reflectors are specified on the departure side of markers on one-way roads to warn motorists they are going the wrong way.
7. Unless otherwise specified on one-way roads, reflectors are required only on the approaching traffic side of markers. In these cases, the 2"-6" taper may be omitted on the departure side.
GENERAL NOTES:

1. All symbols shown shall be white and reflectance in accordance with the Special Provisions.

2. See the Alaska Sign Design Specifications (ASDS) for lettering and symbols for pavement marking details not provided on this drawing.
GENERAL NOTES
1. The crosswalk locations shown assume a 90-degree intersection — adjust as necessary on skewed intersections to ensure that crosswalk landings (for parallel curb ramps) or ramp runs (for perpendicular curb ramps) fall within the inner edges of crosswalk stripes. If Case 3 (not recommended) is used, the layout should also be adjusted to provide at least the minimum clearance while maximizing the offset.

2. If only one crosswalk connects with a curb radius, it should be located as if there were two connecting crosswalks.

3. These details apply to parallel (shown) as well as perpendicular curb ramps.

4. Case 3, the layout for a single central curb ramp, should be used only when installing two ramps is not feasible. It should not be used for radii under 25 feet. See plans for ramp layout at particular locations.

5. Radius is measured to the face of curb.

State of Alaska DOT&PF
ALASKA STANDARD PLAN
CROSSWALK LOCATION AT SIGNALIZED INTERSECTIONS
Adopted as an Alaska Standard Plan by
Carolyn Morgan, P.E.
Chief Engineer
Adoption Date: 7/17/2020

Last Code and Standards Review
By: JLR Date: 7/8/2020
Next Code and Standards Review Date: 7/8/2023
TYPICAL SHOULDER INSTALLATION – TWO-WAY
PERSPECTIVE VIEW
APPLIES TO TWO-WAY OPERATION
WHERE BICYCLES ARE ALLOWED

TYPICAL SHOULDER INSTALLATION – ONE-WAY DIVIDED
PERSPECTIVE VIEW
APPLIES TO ONE-WAY DIVIDED HIGHWAYS
WHERE BICYCLES ARE ALLOWED

SHOULDER RUMBLE STRIP NOTES:
1. PERFORM ALL STAKING AS NECESSARY TO INSTALL RUMBLE STRIPS IN ACCORDANCE WITH THE PLANS, THESE DETAILS, AND THE FOLLOWING NOTES
2. DO NOT INSTALL RUMBLE STRIPS IN THE FOLLOWING INSTANCES:
   A. BRIDGE DECKS
   B. BRIDGE APPROACH SLABS
   C. PAVEMENT LESS THAN 2 INCHES THICK
   D. PAVEMENT THAT HAS ALLIGATORING, FATIGUE, CRACKING, OR IN POOR CONDITION
   E. PAVEMENT JOINTS
   F. SPADE LANE EDGE LINE STRIPING
3. USE CENTERLINE OR LANE LINE DIVIDING LINES, RATHER THAN LANE EDGE LINES, FOR RUMBLE STRIP ALIGNMENT CONTROL WHENEVER POSSIBLE.
4. WHERE BICYCLES ARE ALLOWED ON THE FACILITY, SHOULDER RUMBLE STRIP CAGES (6' RUMBLE STRIP, 12" GAP CENTER TO CENTER, 11'-5" GAP, EDGE TO EDGE) SHOULD BE CONTINUOUS.
5. ON DIVIDED HIGHWAYS, PROVIDE CONTINUOUS RUMBLE STRIP ON THE INSIDE (LEFT) SHOULDER.
6. MINIMUM REQUIRED CLEAR WIDTHS AFTER INSTALLATION ARE AS FOLLOWS:
   A. AT LEAST 4' WHERE NO GUARDRAIL IS PRESENT (5.0' INITIAL SHOULDER WIDTH)
   B. AT LEAST 0' (TO FACE OF GUARDRAIL) WHERE GUARDRAIL IS PRESENT (≥ 7.0' AT INITIAL SHOULDER WIDTH)
   C. NO MINIMUM WHERE BICYCLES ARE PROHIBITED.

Note: Drawing not to scale
Rumble Strip Layout at Bridges with Adequate Shoulder (WHERE BICYCLES ARE ALLOWED)

Rumble Strip Layout in Areas with Narrow Shoulder (WHERE BICYCLES ARE ALLOWED)

Rumble Strip Layout in Areas with Guardrail and Narrow Shoulder (WHERE BICYCLES ARE ALLOWED)

Narrow Shoulder Width Notes:
A six inch tolerance is allowed for distances of 100 ft. or less for the following minimum required clear notes:

a. At least 6" where no guardrail is present.

b. At least 12" (to face of guardrail) where guardrail is present.

c. No minimum where bicycles are permitted.

Note: Drawing not to scale
CENTERLINE RUMBLE STRIP PLAN VIEW

CENTERLINE RUMBLE STRIP NOTES:
1. PERFORM ALL STAKING AS NECESSARY TO INSTALL RUMBLE STRIPS IN ACCORDANCE WITH THE PLANS, THESE DETAILS, AND THE FOLLOWING NOTES.

2. DO NOT INSTALL RUMBLE STRIPS IN THE FOLLOWING INSTANCES:
   A. BRIDGE DECKS
   B. BRIDGE APPROACH SLABS
   C. PAVER LAYERS LESS THAN 2 INCHES THICK
   D. PAVER LAYERS THAT ARE AGGREGATE, FATIGUE, CRACKING, OR IN POOR CONDITION
   E. PAVER JOINTS
   F. INTO LANE EDGE LINE STRIPING

3. WHERE INSTALLED, CENTERLINE RUMBLE STRIPS SHALL BE CONTINUOUS REGARDLESS OF CENTERLINE STRIPING CONFIGURATION. BOTH PASSING AND NO-PASSING PORTIONS OF ROADWAY WITHIN THE LIMITS OF THE CENTERLINE RUMBLE STRIP INSTALLATION SHALL BE WILLED.

4. CENTERLINE RUMBLE STRIPS MAY BE EXTENDED INTO PAINTED MESSAGES WHERE A DOUBLE YELLOW STRIPE SEPARATES OPPOSING TRAFFIC. WHERE CENTERLINES SPLIT TO CREATE A LEFT TURN LANE ALONG A RURAL HIGHWAY, THE RUMBLE SHOULD BE PLACED ALONG BOTH PORTIONS OF THE CENTERLINES.

5. DO NOT INSTALL CENTERLINE RUMBLE STRIPS IN A TWO-WAY LEFT TURN LANE.

6. DO NOT INSTALL CENTERLINE RUMBLE STRIPS WHEN THE COMBINED LANE AND SHOULDER WIDTH IN EACH DIRECTION IS LESS THAN 14'.

7. SPREAD CENTERLINE RUMBLE STRIPS FOR ALL SIDE STREET AND COMMERCIAL ROAD INTERSECTIONS WHERE THERE ARE LEFT TURN LANES.

8. CENTERLINE STRIPING SHALL BE RE-ESTABLISHED FOLLOWING MILLING OPERATIONS IN ACCORDANCE WITH SECTION 808. "TRAFFIC MARKINGS" SO AS TO SURFACE APPLIED MILLISECOND PAVER LAYERS. CENTERLINE RUMBLE STRIPS SHALL BE INSTALLED ON ALL AREAS FOLLOWING CENTERLINE RUMBLE STRIP INSTALLATION WHERE CENTERLINE RUMBLE STRIPS ARE APPLIED.

Note: Drawing not to scale.
TRAFFIC SIGNAL HARDWARE

NOTES:
1. Install the signal heads shown in the plans as detailed on the sheet and per Alaska Traffic Signal.
2. Use standard plastic connectors to install heads on masts and skids. Use flex pipe, as specified.
3. Install transit signals to the side of the road, as detailed on the sheet and per Alaska Traffic Signal.
4. Use standard steel bars, 2-30 ft, spaced as required by MTO and JSA, as specified in Section 6.30.030.
5. Use standard steel bars, 2-30 ft, spaced as required by MTO and JSA, as specified in Section 6.30.030.
6. Use standard steel bars, 2-30 ft, spaced as required by MTO and JSA, as specified in Section 6.30.030.
7. Use standard steel bars, 2-30 ft, spaced as required by MTO and JSA, as specified in Section 6.30.030.
8. Use standard steel bars, 2-30 ft, spaced as required by MTO and JSA, as specified in Section 6.30.030.
GENERAL NOTES:

1. Install ground rod when continuous electrically secure system is not provided between controller and service ground.


3. Anchor bolts may be field cut and bent.

4. Damage to galvanized surfaces as a result of field drilling and or cutting shall be repaired in accordance with Federal Specifications TT-P-641.

5. Use Class A, B, or W concrete.

6. Reinforcing steel to conform to A.S.T.M. A-615 grade 60 (Fy=60 ksi).
GENERAL NOTES

1. Solvent weld all PVC to PVC joints. Use hot dip galvanized steel type X outlet bodies to join the loops and tails.

2. Use tube loop wire per MSA specification 51-5 with the optional polyethylene tubing.

3. Install and test all loop detectors before overlaying the existing pavement or paving the new roadway.

4. Drill five ¼" weep holes on 12" centers in the underside of the conduit at the low spot where the loop and tail cannot be installed to drain into the J-box. If the Engineer allows 90 degree elbows to be used, drill a 1/4" hole in the low point.

5. When installing loop detectors in existing pavement, cut the asphalt with a saw and remove all asphalt within the saw cut.

6. Where existing pavement will not be overlaid, cut the pavement with a saw as follows:
   A. Remove all pavement from the length of the five loop presence fields.
   B. Enclose all loops that enter a common junction box within one saw cut area.
   C. Cut to within 12" of lane and edge lines to preserve them.
   D. Remove asphalt to gutter where there are no edge lines.
   E. Cut across lane lines where loops are side by side.
   F. Cut trenches crossing a lane a minimum of 3" wide.
   G. Cut trenches crossing a shoulder a minimum 12" wide.

7. Heat and seal coat the edges of existing pavement before paving cutouts. Compact the asphalt mixture with a self-propelled steel wheeled roller. Furnish asphalt mix that conforms to section 401 of the Specifications, and is approved by the Engineer. Maintain the replacement asphalt temperature at the mixing temperature specified in the approved mix design until compaction has begun.

8. To establish the reference line, extend the right edges of the outermost through lanes across the intersection.

TYPICAL LOOP SETBACKS

Measure the setbacks from the reference line along the center of each lane.

VIEW B-B

TYPICAL PVC CONDUIT ENCASED LOOP DETECTOR INSTALLATION

Use a hole saw to cut loop tail entry into the J-box. Locate the hole to ensure the loop tails drain into the J-box. Grout around the loop tails to complete the installation.

Use 4 turns of a single piece conductor to form all loops

Wind tail at 3 twists per foot minimum to junction box

SECTION A-A

State of Alaska DOT&PF
ALASKA STANDARD PLAN
LOOP DETECTOR INSTALLATION

Adopted as an Alaska Standard Plan by

 Adoption Date: 02/06/2016

Rev. Date: 02/08/2020

Legend Code and Title Revision

By: Date

Next Code and Standards Review date 02/08/2020
GENERAL NOTES

1. Install anchor bolts so they do not protrude more than 1 1/2" above the top of the foundation. Anchor bolt dimensions shall be as specified by the cabinet manufacturer.

2. Provide all conduit ends with grounding bushings. Seal unused conduit stubs with watertight caps. Provide a one pound package of duct seal compound to be installed in conductor carrying conduit stubs by signal technicians during final inspection.

3. Route the #8 copper grounding jumper from the ground rod through the 2" pipe nipple and attach it to the grounding bushing on the feeder cable conduit.

4. Bond the banded copper grounding conductor to the #8 copper grounding jumper using an irreversible compression connector. Provide sufficient slack such that there will be a minimum of 3" conductor to extend past the lid opening.

5. Stop horizontal and vertical steel at the knock-out panels and the joint using 90° hooks. Place 2 extra #5 horizontal and vertical bars at sides as shown.

STATE OF ALASKA DOT&PF
ALASKA STANDARD PLAN
CONTROLLER CABINET FOUNDATION

Adopted as of June 12, 2015
K. L. Perdue, P.E.
Chief Engineer

Adoption Date: 02/05/2010
Last Code and Safety Review: 02/05/2020
1. Provide pole assemblies designed, manufactured and installed according to 2013 ASME Standard Specifications for Structural Members for Highway Signs, Lampposts and Traffic Signs. Provide a maintenance and inspection schedule. The standard edition of the FHWA’s Highway Signs, Lampposts and Traffic Signs manual identifies the minimum design requirements for the tension members, signals, and signal poles. The vendor shall provide the required documentation and testing of tension members, signals, and signal poles, and any other product as required by the M.T.O. As a minimum, the sign shall incorporate a Hinged Wind-Down and Truck-Induced Trucking:

2. Provide poles to accommodate the maximum length shown in the mastarm data with the given loads, dimensions, and material requirements.

3. Use drawing shows loads (vgota. and signal) to be used by manufacturers when designing poles. It does not show actual loading of poles/mastarms or individual products. This information is intended to be used as a guide for determining the necessary design forces to support the pole/mastarm assembly.

4. The manufacturer is to determine weld sizes, welds and welding shall conform to the latest edition of the structural welding code AWS D1.1. Provide visual testing (VT) of 100% of all welds. Provide magnetic particle testing (MT) or 100% of all welds. Provide radiographic (RT) or ultrasonic testing (UT) of 100% of all welds and 100% of all welds. Provide radiographic (RT) or ultrasonic testing (UT) of 100% of all welds.

5. Fabricate multiple take-off and material from no more than 2 pieces of steel. When using 2 pieces, place the opposite side weld seams directly opposite one another. Reverse weld seams prohibited.

6. Fabricate mastarm and connections according to the latest lifting standard detail.

7. Provide permanent tags on all pole sections per section 7.40 Table 74.11 of the specifications. Provide a weatherproof cover tag on all exposed sections of the structure.

8. The Department will accept damaged or defective parts for any of the following:

   a. Variations from approved shop drawings.
   b. Variations from material requirements.
   c. Fabrication of steel members with welds and welds greater than 0.300".
   d. Sections more than 10 feet in length.

   e. Observations by the Department of the quality of the parts.
   f. Design or mechanical damage or cut.

9. The Department will accept damaged or defective parts for any of the following:

   a. Variations from approved shop drawings.
   b. Variations from material requirements.
   c. Fabrication of steel members with welds and welds greater than 0.300".
   d. Sections more than 10 feet in length.

   e. Observations by the Department of the quality of the parts.
   f. Design or mechanical damage or cut.

10. The Department will accept damaged or defective parts for any of the following:

    a. Variations from approved shop drawings.
    b. Variations from material requirements.
    c. Fabrication of steel members with welds and welds greater than 0.300".
    d. Sections more than 10 feet in length.

ELEVATION VIEW
UPPER SECTION OPTIONS

Upper section

Design Length: 22.5'
Section Shape: Round

MASTARM SLIP SPLICE ELEVATION DETAIL

Post Top Standard

UPPER SECTION BASE DETAIL

MATERIAL REQUIREMENTS

Material Quality: Base

Post Top Connecting Plate: A36
Concentric Reducer: A358
Connection Tube: A372 or A416
Luminaire, Arm, and Mounting Details: A3M1
Upper Section Connection Bolts: ASTM F3125
Fill Cap: ASTM A123 & A183

STANDARD UPPER CONCAVE

Fixed End Diameter: 1.096
Rater: 0.84
Connecting Plate Thickness: 1
Post Top Connecting Bolts: 1/8 UNC x 2.75
Upper Section Diameter: 7.0 A

HOLLOW DIMENSIONS

Upper Section Diameter: 7.0 A x 12.85
Reinforcing Material: 0.5 A x 3
Table Cover: 0.125

SINGLE LUMINAIRE

Design Length: 22.5'
Section Shape: Round

DOUBLE LUMINAIRE

Design Length: 17.5'
Section Shape: Round

DAVID LUMINAIRE

Design Length: 26.5'
Section Shape: Round

DAVID UPPER SECTION BASE DETAIL

State of Alaska DOT&PF
ALASKA STANDARD PLAN
WITH 15' TO 35' MASTARM UPPER SECTION

Adopted as an Alaska State Standard Pole by Carolyn Wooten
P.E. Chief Engineer
Adoption Date: 7/30/2021
Last Code and Style Review: 5/13/2021
Next Code and Standards Review Date: 5/13/2023
**POLY DESIGN LOADING**

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**NOTES:**

1. Provide pole assemblies designed, manufactured, and installed according to 2013 ASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals with 2013 Portable and 2015 Portable. The Alaska State Standards for Highway Construction including standard pavements, and special provisions. Design principles for a Structural Design Life, Foreign Category 3 with 3.6% loading and with a harbor wind speed of 120 mph. Foreign design will include limited web right. Typical=B aural web, and an approved wind loading design in plan or elevating effect.

2. Provide poles to accommodate the maximum length shown in the structure data with the given loads, dimensions, and material requirements.

3. This drawing shows loads (signs and signal) to be used by manufacturers when designing poles. It does not show actual loading of poles. The actual design must be used with further analysis if the following conditions are met:
   - The grade sign (load #5) is attached to the grade base section pole.
   - More than 3 traffic signals and/or signs are attached to the mastarm.
   - If the conditions are not met, the standard pole design may be used, but as extra conditions to design criteria (note 1) using actual loads. The length of each pole may be added to the grade base without causing a need for additional design comparisons.

4. The manufacturer should determine wind sizes. All welds and testing shall conform to the latest edition of the Structural Welding Code AWS D1. This design shall be per AWS D1.01 and AWS D1.02. Provide welds per AWS D1.01 and AWS D1.02. Provide radiographs (20%) of all welds, and ensure all material requirements are met. Provide detailed plans and drawings for all welds. Provide complete documentation of all welds and testing.

5. Fabricate pole tubes and metal tubes from one to four pieces of steel. When using two pieces, place the longitudinal welds directly opposite one another. Transverse welds are prohibited.

6. Fabricate luminaires and connections according to the latest lighting standard detail.

7. Provide permanent tags on all pole sections per section 740 table 761-1 of the specifications. Provide a weatherproof metal tag on all exposed sections of the structure.

8. The Department will reject damaged or defective poles for any of the following:
   - Variance from approved shop drawings, variance from material requirements, sections more than 300 mm (12") in height.
   - Flared end surfaces with radii of 300 mm (12") per section 740-1.01.8.
   - Distortion and/or warping of the pole, mastarm, or sections, or damaged or damaged finish.

9. To allow for weight, field drill a 0.25" maximum diameter hole in each metal tube before installation. Grout the hole in the horizontal axis of the mastarm.

10. [Insert] pole tabed outside from top to bottom in the direction opposite the mastarm, such that the edges of the pole opposite the mastarm is vertical.

11. Clean and remove dirt, rust, scale, and excess paint from all exposed surfaces before assembly. Lubricate the threads of all bolts and nuts with lubricant containing a visible dye. Tighten all bolts according to section 304 of the specifications.

**ELEVATION VIEW**

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**State of Alaska DOT&PF**
**ALASKA STANDARD PLAN**
**SIGNAL POLE**
**WITH 40' TO 50' MASTARM**

**LOADING & NOTES**

Adopted as an Alaska
Standard Plan by

Carolyn Vehreus, P.E.
Chief Engineer
Adoption Date: 7/30/2021
Last Code and Style Review: By Date: 5/3/2021
Next Code and Standards Review Date: 5/13/2021

T-55.11 1 0
UPPER SECTION OPTIONS

POST TOP STANDARD
UPPER SECTION
BASE DETAIL

POST TOP CONNECTING
PLATE DETAIL

MASTARM SLIP SPlice ELEVATION DETAIL

DAVIT LUMINAIRE

T-55.11
STATE OF ALASKA DOT&PF
ALASKA STANDARD PLAN
SIGNA L POLE
WITH 40' TO 50' MASTARM
UPPER SE CTION

Adopted as an Alaska Standard Plan by
Carolyn Workhouse, P.E.
State Engineer
Adopter Date: 7/30/2001

User Code and Sheet Review
By: Date: 5/13/2021
Next Code and Standards Review Date: 5/13/2023
RING DETAIL

Abbreviated title: MASTARM & STIFFENED BOX WITH 55' TO 65' MASTARM & STIFFENED BOX

Notes:
- Slits for galvanizing drainage per manufacturer's criteria.
- Slits 1-1/2" overblown holes.
- MASTARM BASE PLATE: Install with six MASTARM bolts and washer sets.
- MASTARM MOUNTING PLATE: Install with six MASTARM bolts and washer sets.
- Pole: Fit to pole.

SECTION B-B

Abbreviated title: MASTARM & STIFFENED BOX WITH 55' TO 65' MASTARM & STIFFENED BOX

Notes:
- TUBE TO TRANSVERSE PLATE WELD DETAIL: (Note: washers under ring cutout for clarity)
- VIBRATION MITIGATION CONNECTION DETAIL
- RING - STIFFENED BOX DETAILS

Abbreviated title: MASTARM & STIFFENED BOX WITH 55' TO 65' MASTARM & STIFFENED BOX

Notes:
- MASTARM BASE PLATE: Plate opening diameter.
- MASTARM MOUNTING PLATE: Plate opening diameter.

Abbreviated title: MASTARM & STIFFENED BOX WITH 55' TO 65' MASTARM & STIFFENED BOX

Notes:
- MATERIAL REQUIREMENTS:
  - MATERIAL QUALITY GUIDANCE:
    - Sheet 3/12-Thick: ASTM A516 or A500
    - Sheet 3/12-Thick: ASTM A516 or A500
  - Steel 3/12-Thick: ASTM A516 (Grade B - Zone II)
  - Finish: ASTM A307 A & A325
  - MASTARM Bolts: ASTM F1554
  - MASTARM Washers: ASTM F436
  - Anchor Bolt: See T-402

Abbreviated title: MASTARM & STIFFENED BOX WITH 55' TO 65' MASTARM & STIFFENED BOX

Notes:
- TUBE TO TRANSVERSE PLATE WELD DETAIL: (Note: washers under ring cutout for clarity)
- VIBRATION MITIGATION CONNECTION DETAIL
- RING - STIFFENED BOX DETAILS

Abbreviated title: MASTARM & STIFFENED BOX WITH 55' TO 65' MASTARM & STIFFENED BOX

Notes:
- MASTARM BASE PLATE: Plate opening diameter.
- MASTARM MOUNTING PLATE: Plate opening diameter.

Abbreviated title: MASTARM & STIFFENED BOX WITH 55' TO 65' MASTARM & STIFFENED BOX

Notes:
- MASTARM BASE PLATE: Plate opening diameter.
- MASTARM MOUNTING PLATE: Plate opening diameter.
UPPER SECTION OPTIONS

POST TOP STANDARD
UPPER SECTION BASE DETAIL

MASTARM SLIP SLICE ELEVATION DETAIL

POST TOP CONNECTING PLATE DETAIL

DAVIT UPPER SECTION BASE DETAIL

STATE OF ALASKA DOT&PF
ALASKA STANDARD PLAN
SIGNAL POLE WITH 55' TO 65' MASTARM UPPER SECTION

Adapted as an Alaska Standard Plan by: Carolyn Welnhofer, P.E.
Chief Engineer
Adoption Date: 7/30/2021
Last Code and Style Review By: Date: 5/13/2021
Next Code and Standards Review date: 5/13/2021

MATERIAL QUALITY GUIDELINES

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<th>QUALITY</th>
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</thead>
<tbody>
<tr>
<td>Tube Material</td>
<td>ASTM A500-05 or A511 (52ksi min)</td>
</tr>
<tr>
<td>Post Top Connecting Plate</td>
<td>ASTM A516 (Zone 3)</td>
</tr>
<tr>
<td>Connection Rod</td>
<td>ASTM A32</td>
</tr>
<tr>
<td>Tube</td>
<td>ASTM A500-05</td>
</tr>
<tr>
<td>Upper Section Connection</td>
<td>ASTM F1325</td>
</tr>
<tr>
<td>Slip Fit Through Bolt</td>
<td>ASTM F1325</td>
</tr>
<tr>
<td>Finish</td>
<td>ASTM A123 &amp; A153</td>
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STANDARD UPPER SECTION:

<table>
<thead>
<tr>
<th>FEATURE</th>
<th>DIMENSION</th>
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<tbody>
<tr>
<td>Fixed End Diameter</td>
<td>10.99&quot; O.D.</td>
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<tr>
<td>Taper</td>
<td>0.16/ft</td>
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<tr>
<td>Connecting Plate Thickness</td>
<td>0.15&quot;</td>
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<tr>
<td>Post Top Connection Bolts</td>
<td>7/8 UNC x 3.5&quot;</td>
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<tr>
<td>Tube Thickness</td>
<td>7 GA</td>
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</table>

MINIMUM DIMENSIONS

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<tr>
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<th>DIMENSION</th>
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<tbody>
<tr>
<td>Upper Section Width</td>
<td>7&quot; x 12.69&quot;</td>
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<tr>
<td>Reinforcing Material</td>
<td>0.05&quot; x 2&quot;</td>
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<tr>
<td>Handhole Cover</td>
<td>0.125&quot;</td>
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SINGLE LUMINAIRE

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<tr>
<td>Design Length</td>
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<td>Section Shape</td>
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DOUBLE LUMINAIRE

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<tbody>
<tr>
<td>Design Length</td>
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<td>Section Shape</td>
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DAVIT LUMINAIRE

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<tr>
<td>Design Length</td>
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<td>Section Shape</td>
<td>Round</td>
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<tr>
<td>Taper</td>
<td>0.14/ft</td>
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<td>Fixed End Diameter</td>
<td>3.575&quot; O.D.</td>
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<tr>
<td>Connection Tube</td>
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<tr>
<td>Connection Reducer</td>
<td>7 GA</td>
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<tr>
<td>Davit Arm Connection Tube</td>
<td>7 GA</td>
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<tr>
<td>Davit Arm</td>
<td>7 GA</td>
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</table>

UPPER SECTION WITH 55' TO 65' MASTARM SIGNAL POLE
RIGID STIFFENED BOX DETAILS

RING DETAIL

MASTARM & STIFFENED BOX WITH 70' TO 75' MASTARM SIGNAL POLE

SECTION B-B

VIBRATION MITIGATOR CONNECTION DETAIL

STATEMENT OF CONFORMITY

This document is a standard plan for the State of Alaska DOT&PF.

Adopted as an Alaska Standard Plan by

Carolyn Warehous, P.E.
Chief Engineer

Adoption Date: 3/20/2021

Latest Code and Stands Review
By: Carolyn Warehous, P.E.
Date: 5/1/2021
Next Code and Standards Review Date: 5/1/2026
**GENERAL NOTES:**

1. Thrust blocks are to be concrete poured in place between the fitting and undisturbed trench wall.
2. Concrete shall be kept centered behind bell of fitting and not obstructing pipe joints.
3. Thrust blocks are required whenever pipe-line changes direction, changes size, dead ends, or develops thrust of valves.
4. Material behind the thrust blocks, deemed unsatisfactory by the engineer shall be removed and replaced as directed by the engineer.
5. In impervious soils, a hole shall be dug beneath the hydrant thrust block to a minimum volume of 7 cubic feet. The hole shall be filled with porous backfill material.
6. Refer to AWWA C600-64 Section II for placement of hydrant.
7. Orient hydrant with nozzles facing street.